

**MATERIALS SCREENED
AS ANIMAL SYSTEMIC INSECTICIDES
AT KERRVILLE, TEXAS, 1967-1973**

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MATERIALS SCREENED AS ANIMAL SYSTEMIC INSECTICIDES
AT KERRVILLE, TEXAS, 1967-1973

By R. O. Drummond¹

ABSTRACT

This report presents the procedures and results of tests with 474 chemical compounds screened by the guinea pig-multiple arthropod test to determine their activity as systemic insecticides against larvae of the black blow fly, Phormia regina (Meigen), larvae of the screwworm, Cochliomyia hominivorax (Coquerel), larvae of the secondary screwworm, Cochliomyia macellaria (F.), adults of the stable fly, Stomoxys calcitrans (L.), and nymphs of the lone star tick, Amblyomma americanum (L.), on guinea pigs treated orally or subcutaneously. Of the 157 systemically active compounds, 128 (81 percent) were active against fly larvae, 74 (47 percent) were active against adult stable flies, and 95 (60 percent) were active against ticks. Nineteen compounds (12 percent) were systemically active orally, 27 (17 percent) were active subcutaneously, and 111 (71 percent) were systemically active both orally and subcutaneously. Also, 99 compounds (63 percent) were systemically active at dosages lower than those lethal to guinea pigs, and 58 (37 percent) were systemically active at dosages equal to or greater than those lethal to guinea pigs.

INTRODUCTION

In an effort to detect the systemic activity of materials administered to animals, a screening test, the guinea pig-multiple arthropod test, was established at the U.S. Livestock Insects Laboratory, Agricultural Research Service, U.S. Department of Agriculture, Kerrville, Tex., in 1953. Before that date, a number of materials were evaluated as systemics in both in vivo and in vitro tests with first-instar larvae of Hypoderma lineatum (de Villers), the common cattle grub (1).² McGregor and Bushland (22) described a test procedure in which guinea pigs infested with larvae of the screwworm,

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²Underscored numbers in parentheses refer to items in "Literature Cited" preceding table 2.

Cochliomyia hominivorax (Coquerel), were treated subcutaneously with candidate compounds. Also, techniques were developed for feeding stable flies, Stomoxys calcitrans (L.), and lone star ticks, Amblyomma americanum (L.), on guinea pigs treated orally or subcutaneously. Some modifications and standardizations in the testing procedures were reported by Drummond (2). Graham (21) included the Kerrville testing procedure in his description of techniques to detect the activity of animal systemic insecticides. In 1962, because of the program to eradicate screwworms from the Southwestern United States, it was necessary to replace screwworm larvae with larvae of the secondary screwworm, C. macellaria (F.), and the black blow fly, Phormia regina (Meigen); details of the change in technique were presented by Drummond (8). This technique remained unchanged until the test was discontinued in 1973.

In a series of papers (3, 5-11, 13-15, 18, 19), the results of screening tests with the guinea pig-multiple arthropod model and results of secondary tests on cattle with 231 systemically active insecticides for the control of cattle grubs, Hypoderma spp., were presented. In addition, Drummond (4, 12) presented the results of screening tests with 438 compounds and with 640 compounds. This report contains results of an additional 474 compounds screened by the same technique. Most of these compounds were tested during 1968-1973, although some were tested earlier, and identification of the chemical structures was obtained after publication of the previous papers.

EXPERIMENTAL PROCEDURES

The procedures were explained briefly by Drummond (2, 8) and in detail by Graham (21) and Drummond (12). Guinea pigs were infested with 10 starved nymphal lone star ticks about 48 hours before treatment. About 24 hours before treatment, the guinea pigs were wounded, and the wounds were infested with the larvae of the screwworm, secondary screwworm, or black blow fly. At the time of treatment, the guinea pigs were weighed and treated orally or subcutaneously at specific dosages of candidate chemicals, usually formulated as 5-percent solutions in Tween-20 (polyoxyethylene sorbitan monolaurate). The initial dosage was usually 100 milligrams per kilogram. Approximately 4 hours after treatment, about 30 starved adult stable flies were allowed to engorge on the guinea pigs. The fed flies were held for 24 hours, and then mortality was recorded. At 24 hours after treatment, additional stable flies were fed on the guinea pigs, and wounds were examined for live larvae. About 3 to 5 days after treatment, engorged nymphal ticks were collected and held for at least a month. Mortality of the ticks was determined during the engorging and molting periods.

If any of the arthropods or guinea pigs were killed at initial dosages, lower dosages--50, 25, 10, or 5 milligrams per kilogram etc.--were administered until there was either no systemic activity or the guinea pigs survived.

RESULTS AND DISCUSSION

Of the 474 compounds tested, 157 (33 percent) were systemically active. Data from the two previous reports (4, 12) and this report combined resulted in a total of 1,552 compounds tested and, of these, 420 (27 percent) were systemically active (table 1).

TABLE 1.--Spectrum of activity of systemically active compounds screened from 1953 to 1973

Arthropod active against	No. compounds	
	From table 2	Total ¹
Fly larvae.....	27	109
Fly larvae and stable fly adults.....	24	81
Fly larvae and ticks.....	42	60
Fly larvae, stable fly adults, and ticks.....	35	82
Stable fly adults.....	11	46
Stable fly adults and ticks.....	4	13
Ticks.....	14	29
Total.....	157	420

¹From table 2 plus compounds in references 4 and 12.

The results of tests with the 474 compounds are presented in table 2. The compounds are listed alphabetically by chemical nomenclature that was standard until 1972, since the materials were received and defined under that nomenclature. In the index, the compounds are listed by AI3 number (formerly ENT number)³ with reference to the corresponding company number and item number from table 2.

Of the 157 systemically active compounds (table 1), 128 (81 percent) were active against fly larvae, 74 (47 percent) were active against adult stable flies, and 95 (60 percent) were active against ticks. As table 2 shows, 19 compounds (12 percent) were systemically active orally, 27 (17 percent) were active subcutaneously, and 111 (71 percent) were systemically active both orally and subcutaneously. Also, 99 compounds (63 percent) were systemically active at dosages lower than those lethal to guinea pigs, and 58 (37 percent) were systemically active at dosages equal to or greater than those lethal to guinea pigs.

Although the guinea pig-multiple arthropod test has been used to screen a large number of compounds and has detected over 400 systemically active insecticides, it has certain specific limitations with respect to the cattle-

³Numbers assigned by Agricultural Research Service to chemicals used in entomological investigations.

Hypoderma, host-parasite system, which is the target of the research. None of the arthropods in the guinea pig-multiple arthropod test migrates through the animal's body and produces furuncular myiasis as cattle grubs do. Also, because of the external feeding of ticks and flies and the presence of open wounds containing fly larvae in guinea pigs, we could not administer materials dermally to the guinea pigs.

As announced by Drummond et al. (17) and presented in detail by Gingrich et al. (20), a new host-parasite system, the mouse-Cuterebra test, was developed for screening animal systemic insecticides. In this test, white mice are infested nasally or orally with newly hatched larvae of Cuterebra fontinella, and 2 days later the mice are treated orally with candidate materials. Seven days after treatment, the mice are killed and examined for encysted larvae by noting breathing holes or by palpation. In addition to oral treatments, some mice are dipped in insecticides for dermal treatments (16). Effective systemics kill larvae while they are migrating through the mouse's body (a situation similar to the migration of first-instar Hypoderma larvae in cattle). Because of the greater relativity (to the cattle-Hypoderma cycle) and versatility of the mouse-Cuterebra test, this test replaced the guinea pig-multiple arthropod test in the spring of 1973. Thus, this is the last report containing results of the guinea pig-multiple arthropod test.

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TABLE 2.--Systemic effectiveness of 474 compounds against secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs

[N, no dosage was lethal; I, no dosage was systemically active]

Item No.	AI3 No. (AI3-)	Chemical	Highest dosage (mg/kg) and method of administration	Lowest dosage (mg/kg)--				
				Lethal to guinea pigs	Causing 100 percent kill of--			
					Larvae of--			
					Second- dary screw- worms	Black blow flies	Adult stable flies	Nymphal lone star ticks
1	70322	Acetamide, N-butyl-N-1-cyclohexen-1-yl-	100 O. 100 Sc.	N N	I I	I I	I I	I I
2	28966	Acetamide, N-butyl-N-(3,7-dimethyl-1,6-octadienyl)-	100 O. 100 Sc.	N N	I I	I I	I I	I I
3	28968	Acetamide, N-butyl-N-(2-ethyl-1-hexenyl)-	100 O. 100 Sc.	N N	I I	I I	I I	I I
4	28969	Acetamide, N-butyl-N-p-menth-3-en-3-yl-	100 O. 100 Sc.	N N	I I	I I	I I	I I
5	28967	Acetamide, N-cyclohexyl-N-(3,7-dimethyl-1,6-octadienyl)-	100 O. 100 Sc.	N N	I I	I I	I I	I I
6	70141	Acetamide, N-cyclohexyl-N-(2-ethyl-1-hexenyl)-	100 O. 100 Sc.	N 100	I I	I I	I I	I I
7	16742	Acetamide, N-cyclohexyl-N-(2-ethylhexyl)-	100 O. 100 Sc.	N 100	I I	I I	I I	I I
8	28970	Acetamide, N-cyclohexyl-N-(2-methylpropenyl)-	100 O. 100 Sc.	N N	I I	I I	I I	I I
9	27722	Acetic acid, bis(p-bromophenyl)hydroperoxy-, isopropyl ester	100 O. 100 Sc.	100 100	I I	I I	I I	I I

10	27721	Acetic acid, bis(<u>p</u> -chlorophenyl)hydroperoxy-, isopropyl ester	100 O. 100 Sc.	I I	I I	I I
11	27835	Acetic acid, mercapto-, 2-carboxy-2-methylhydrazide, methyl ester, S-ester with <u>O</u> , <u>O</u> -dimethyl phosphorothioate	N 100 O. 100 Sc.	25 100	25 100	100 50 25 25
12	27814	Acetic acid, mercapto-, 2-(2-cyanopropyl)-2-methylhydrazide, S-ester with <u>O</u> , <u>O</u> -dimethyl phosphorothioate	50 O. 50 Sc.	50 100	100 100	I I 25 50
13	27509	Acetic acid, mercapto-, 2,2-dimethylhydrazide, <u>O</u> -ethyl ethylphosphonodithioate (ester)	5 O. 5 Sc.	10 25	10 50	I I 10 I
14	27797	Acetic acid, phenyl-, 5-chloro-2-(dimethylamino)- <u>alpha</u> - <u>o</u> -tolylbenzyl ester	100 O. 100 Sc.	100 N	I I	I I I I
15	27411	Acetimidic acid, N-(carbamoyloxy)thio-, methyl ester	100 O. 100 Sc.	25 25	I I	I I I I
16	27977	Acetimidic acid, N-methoxy-2-thio-, methyl ester, S-ester with <u>O</u> -ethyl= isopropylphosphoramidothioate	25 O. 25 Sc.	25 5	I 25	I 25 I 25
17	27978	Acetimidic acid, N-methoxy-2-thio-, methyl ester, S-ester with <u>O</u> -methyl isopropylphosphoramidothioate	25 O. 25 Sc.	25 10	I 25	I I I 25
18	27519	Acetimidic acid, N-[(methylcarbamoyl)oxy]thio-, ester with mercaptoacetoneitrile	25 O. 25 Sc.	10 5	I I	I I I I
19	27613	Acetimidic acid, N-[(methylcarbamoyl)oxy]thio-, ester with 3-mercaptopropionitrile	100 O. 100 Sc.	25 5	I I	I I I I
20	27323	Acetimidoyl chloride, 2,2,2-trichloro-N-(pentachlorophenyl)-	100 O. 100 Sc.	N 25	I I	I I I I
21	27905	Allophanic acid, 4,4'- <u>o</u> -phenylenebis[3-thio-], dimethyl ester	100 O. 100 Sc.	N N	I I	I I I I

See footnotes at end of table.

ABLE 2.---Systemic effectiveness of 474 compounds against secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs--Continued

[N, no dosage was lethal; I, no dosage was systemically active]

Item No.	A13 No. (A13-)	Chemical	Highest dosage (mg/kg) and method of administration	Lowest dosage (mg/kg)---				
				Lethal to guinea pigs	Second- dary screw- worms	Black blow flies	Adult stable flies	Nymphal lone star ticks
22	28012-X	Ammonium, dialkyl dimethyl ---salicylate	100 O. 100 Sc.	N 100	I I	I I	I I	I I
23	28019-X	Ammonium, dialkyl dimethyl ---salt with 2',4'-dihydroxybenzophenone	100 O. 100 Sc.	N N	I I	I I	I I	I I
24	28020-X	Ammonium, dialkyl dimethyl ---salt with 2,2',4,4'-tetrahydroxybenzophenone	100 O. 100 Sc.	N N	I I	I I	I I	I I
25	27793	m-Anisic acid, 5-chloro-2-(dimethylamino)- <u>alpha</u> -phenylbenzyl ester	100 O. 100 Sc.	N N	I I	I I	I I	I I
26	27780	m-Anisic acid, 5-chloro-2-(dimethylamino)- <u>alpha</u> -o-tolylbenzyl ester	100 O. 100 Sc.	N N	I I	I I	I I	I I
27	27792	o-Anisic acid, 5-chloro-2-(dimethylamino)- <u>alpha</u> -phenylbenzyl ester	100 O. 100 Sc.	N N	I I	I I	I I	I I
28	27778	p-Anisic acid, 5-chloro-2-(dimethylamino)- <u>alpha</u> -o-tolylbenzyl ester	100 O. 100 Sc.	N N	I I	I I	I I	I I
29	27546	o-Anisimidic acid, 3,6-dichloro-N-ethoxy-, anhydride with benzoic acid	100 O. 100 Sc.	N 100	I I	I I	I I	I I
30	27545	o-Anisimidic acid, 3,6-dichloro-N-ethoxy-, anhydride with p-toluic acid	100 O. 100 Sc.	N N	I I	I I	I I	I I

31	70081	Anisole, 3-methyl-4-(methylthio)-	100 O.	N	I	I	I	I
			100 Sc.	N	I	I	I	I
32	70080	Anisole, 4-(methylthio)-	100 O.	N	—	I	I	I
			100 Sc.	N	—	I	I	I
33	27770	Benzamide, <u>N</u> -acetyl-3-chloro- <u>N</u> ,2,6-trimethoxy-	100 O.	N	I	I	I	I
			100 Sc.	100	I	I	I	I
34	27633	Benzamide, <u>N</u> -butyl- <u>m</u> -[[(dichlorofluoromethyl)-thio](trifluoromethyl)amino]-	100 O.	100	I	I	I	I
			100 Sc.	50	I	I	I	I
35	28962	Benzamide, <u>N</u> -butyl- <u>N</u> -(3,7-dimethyl-1,6-octadienyl)-	100 O.	N	I	I	I	I
			100 Sc.	N	I	I	I	I
36	28973	Benzamide, <u>N</u> -butyl- <u>N</u> - <u>p</u> -menth-3-en-3-yl-	100 O.	N	I	I	I	I
			100 Sc.	N	I	I	I	I
37	28972	Benzamide, <u>N</u> -butyl- <u>N</u> -(2-methylpropenyl)-	100 O.	N	I	I	I	I
			100 Sc.	N	I	I	I	I
38	70085	Benzamide, <u>o</u> -chloro- <u>N</u> , <u>N</u> -dipentyl-	100 O.	N	—	I	I	I
			100 Sc.	N	—	I	I	I
39	28971	Benzamide, <u>N</u> -cyclohexyl- <u>N</u> -(2-methylpropenyl)-	100 O.	N	I	I	I	I
			100 Sc.	N	I	I	I	I
40	70086	Benzamide, <u>N</u> , <u>N</u> -dipentyl-	100 O.	N	I	I	I	I
			100 Sc.	100	I	I	I	I
41	27947	Benzene, <u>p</u> -bis(2-propynyloxy)-	100 O.	N	I	I	I	I
			100 Sc.	100	I	I	I	I
42	70078	Benzene, 1-chloro-2,4-dimethoxy-	100 O.	100	I	I	I	I
			100 Sc.	100	I	I	I	I
43	70082	Benzene, 2,4-dimethoxy-1-propyl-	100 O.	N	—	I	I	I
			100 Sc.	N	—	I	I	I
44	24864	Benzenesulfonamide, 2,5-dichloro- <u>N</u> , <u>N</u> -diethyl-	100 O.	100	I	I	I	I
			100 Sc.	100	I	I	I	I

See footnotes at end of table.

TABLE 2.--Systemic effectiveness of 474 compounds against secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs--Continued

[N, no dosage was lethal; I, no dosage was systemically active]

Item No.	AI3 No. (AI3-)	Chemical	Highest dosage (mg/kg) and method of administration	Lowest dosage (mg/kg)--				
				Lethal guinea pigs	Causing 100 percent kill of--			
					Second-dary	Black blow flies	Adult stable flies	Nymphal lone star ticks
45	27786	Benzhydrol, 5-chloro-2-(dimethylamino)-, benzoate (ester)	100 O. 100 Sc.	N N	I I	I I	I I	I I
46	27771	Benzhydrol, 5-chloro-2-(dimethylamino)-2'-methyl-, benzoate (ester)	100 O. 100 Sc.	100 N	I I	I I	I I	I I
47	27605	Benzilic acid, 4,4'-dibromo-, ethyl ester	100 O. 100 Sc.	N N	I I	I I	I I	I I
48	29049	Benzimidazole, 2-(chlorodifluoromethyl)-4-nitro-6-(trifluoromethyl)-	100 O. 100 Sc.	25 25	10 1	10 1	10 310	10 10
49	29055	1-Benzimidazolecarboxylic acid, 4,6-difluoro-2-(trifluoromethyl)-, isopropyl ester	100 O. 100 Sc.	50 100	I I	I I	I I	I I
50	27953	1-Benzimidazolecarboxylic acid, 4-nitro-2,6-bis(trifluoromethyl)-, isopropyl ester	100 O. 100 Sc.	25 25	5 5	5 5	5 10	5 5
51	29048	1-Benzimidazolecarboxylic acid, 4-nitro-2,6-bis(trifluoromethyl)-, phenyl ester	100 O. 100 Sc.	25 10	5 5	5 10	5 25	5 2.5
52	29010	Benzimidic acid, N-ethoxy-, O-anhydride with O,O-diethyl phosphorothioate	100 O. 100 Sc.	25 50	25 5	25 25	50 I	I I
53	27776	Benzoic acid, m-chloro-, 5-chloro-2-(dimethylamino)- <u>alpha</u> -o-tolylbenzyl ester	100 O. 100 Sc.	N N	I I	I I	I I	I I

54	27787	Benzoic acid, <u>o</u> -chloro-, 5-chloro-2-(dimethylamino)- <u>alpha</u> -phenylbenzyl ester	100 O.	100 Sc.	I	I	I	I	I	I
55	27774	Benzoic acid, <u>p</u> -chloro-, 5 chloro-2-(dimethylamino)- <u>alpha</u> - <u>o</u> -tolylbenzyl ester	100 O.	100 Sc.	I	I	I	I	I	I
56	27497	Benzoic acid, <u>m</u> -(cyano- <u>N</u> -hydroxyformimidoyl)-, methyl ester, diethyl phosphate	100 O.	100 Sc.	I	I	I	I	I	I
57	29033	Benzoic acid, <u>m</u> -(cyano- <u>N</u> -hydroxyformimidoyl)-, methyl ester, <u>O</u> -ester with <u>O</u> , <u>O</u> -diethyl phosphorothioate	100 O.	100 Sc.	I	I	I	I	I	I
58	70349	Benzoic acid, <u>p</u> -[(1,5-dimethylhexyl)oxy]-, methyl ester	100 O.	100 Sc.	I	I	I	I	I	I
59	27850	Benzonitrile, 4-hydroxy-2-isopropyl-, methanesulfonate	100 O.	100 Sc.	I	I	I	I	I	25
60	27906	Benzothiazole, 2-(methylsulfonyl)-6-nitro-	100 O.	100 Sc.	I	I	I	I	I	25
61	27645	Benzoyl chloride, phenylhydrazone	100 O.	100 Sc.	I	I	I	I	I	I
62	27646	Benzoyl chloride, (2,4,6-trichlorophenyl)-hydrazone	100 O.	100 Sc.	I	I	I	I	I	I
63	27349	3-Biphenylcarboxy- <u>o</u> -toluidide, 4',5-dichloro-4'',-fluoro-2-hydroxy-	100 O.	100 Sc.	I	I	I	I	I	I
64	27851	2-Butanone, 3,3-dimethyl-1-(methylthio)-, <u>O</u> -(methylcarbamoyl)oxime	10 O.	10 Sc.	I	I	I	I	I	10
65	23122	3-Buten-2-ol, 2-methyl-	100 O.	100 Sc.	4I	4I	I	I	I	I
66	27215	Butyric acid, 2-chloro-, 2- <u>sec</u> -butyl-4,6-dinitrophenyl ester	100 O.	100 Sc.	I	I	I	I	I	I

See footnotes at end of table.

TABLE 2.--Systemic effectiveness of 474 compounds against secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs--Continued

[N, no dosage was lethal; I, no dosage was systemically active]

Item No.	AI3 No. (AI3-)	Chemical	Highest dosage (mg/kg) and method of administration	Lowest dosage (mg/kg)--				
				Lethal to guinea pigs	Second-dary screw-worms	Larvae of-- Black blow flies	Adult stable flies	Nymphal lone star ticks
67	27968-X	Carbamic acid, acetylmethyl-, m-cumenyl ester (60 percent), mixture with p-cumenyl acetylmethylcarbamate (40 percent)	100 O. 100 Sc.	50 50	I I	I I	I I	I I
68	27468	Carbamic acid, acetylmethyl-, 2,3-dihydro-2,2-dimethyl-7-benzofuranyl ester	100 O. 100 Sc.	25 5	I I	I I	I I	I I
69	27457	Carbamic acid, (chloroacetyl)methyl-, m-tert-butylphenyl ester	100 O. 100 Sc.	100 50	I I	I I	I I	I I
70	27334	Carbamic acid, (chloroacetyl)methyl-, m-cumenyl ester	100 O. 100 Sc.	50 25	I I	I I	I I	I I
71	27750	Carbamic acid, (chloroacetyl)methyl-, 4-(dimethylamino)-3,5-xylyl ester	100 O. 100 Sc.	50 50	I I	I I	I I	50 50
72	27456	Carbamic acid, (chloroacetyl)methyl-, m-tolyl ester	100 O. 100 Sc.	N N	I I	I I	I I	I I
73	27783	Carbamic acid, (3-chloro-2,6-dimethoxybenzoyl)-methoxy-, ethyl ester	100 O. 100 Sc.	100 100	I I	I I	I I	I I
74	27790	Carbamic acid, (3-chloro-2,6-dimethoxybenzoyl)-methoxy-, isopropyl ester	100 O. 100 Sc.	N N	I I	I I	I I	I I
75	27459	Carbamic acid, (dichloroacetyl)methyl-, m-tert-butylphenyl ester	100 O. 100 Sc.	100 100	I I	I I	I I	I I

76	27455	Carbamic acid, (dichloroacetyl)methyl-, <u>m</u> -cumenyl ester	100 O.	25	I	I	I	I	I
			100 Sc.	10	I	I	I	I	I
77	27772	Carbamic acid, (3,6-dichloro- <u>o</u> -anisoyl)-methoxy-, ethyl ester	100 O.	N	I	I	I	I	I
			100 Sc.	50	I	I	I	I	I
78	27775	Carbamic acid, (3,6-dichloro- <u>o</u> -anisoyl)-methoxythio-, <u>S</u> -ethyl ester	100 O.	N	I	I	I	I	I
			100 Sc.	100	I	I	I	I	I
79	27981	Carbamic acid, [(dichlorofluoromethyl)thio]-methyl-, <u>o</u> -isopropoxyphenyl ester	100 O.	100	I	I	I	I	I
			100 Sc.	50	I	I	I	I	I
80	29036	Carbamic acid, dimethyl-, 4- <u>sec</u> -butyl-2-methyl-5-thiazolyl ester	100 O.	50	I	I	I	I	I
			100 Sc.	25	I	I	I	I	I
81	27624	Carbamic acid, dimethyl-, <u>o</u> -1,3-dithiolan-2-ylphenyl ester	100 O.	25	I	I	I	I	I
			100 Sc.	5	I	I	I	I	I
82	27734-X	Carbamic acid, dimethyl-, 5-quinolyl ester,	50 O.	50	I	I	I	I	I
			50 Sc.	5	I	I	I	I	I
83	70053	Carbamic acid, dimethyl-, 2,3,4,6-tetrachlorophenyl ester	100 O.	N	I	I	I	I	I
			100 Sc.	N	I	I	I	I	I
84	25955	Carbamic acid, hydroxy-, <u>m</u> -cumenyl ester	100 O.	25	I	I	I	I	I
			100 Sc.	10	I	I	I	I	I
85	27706	Carbamic acid, (mercaptoacetyl)methyl-, <u>p</u> -tert-butylphenyl ester, <u>S</u> -ester with <u>O</u> , <u>O</u> -dimethyl phosphorodithioate	100 O.	N	50	50	50	50	I
			100 Sc.	N	I	I	I	I	I
86	27348	Carbamic acid, (mercaptoacetyl)methyl-, <u>m</u> -cumenyl ester, <u>S</u> -ester with <u>O</u> , <u>O</u> -dimethyl phosphorodithioate	100 O.	100	25	50	25	25	I
			100 Sc.	10	I	I	I	I	I
87	27955	Carbamic acid, (mercaptoacetyl)methyl-, <u>O</u> -ester with methyl <u>p</u> -hydroxybenzoate, <u>S</u> -ester with <u>O</u> , <u>O</u> -dimethyl phosphorothioate	100 O.	N	25	25	25	25	100
			100 Sc.	N	25	50	50	50	I

See footnotes at end of table.

TABLE 2.—Systemic effectiveness of 474 compounds against secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs—Continued

[N, no dosage was lethal; I, no dosage was systemically active]

Item No.	AI3 No. (AI3-)	Chemical	Highest dosage (mg/kg) and method of admini- stration	Lowest dosage (mg/kg)--						
				Causing 100 percent kill of--						
				Lethal to guinea pigs	larvae of--			Adult stable flies	Nymphal lone star ticks	
					Secon- dary screw- worms	Black blow flies	Black stable flies			
88	27723	Carbamic acid, (mercaptoacetyl)methyl-, methyl ester, S-ester with O-methyl	100 O. 100 Sc.	25 50	50 50	25 50	I I	100 100		
89	27954	Carbamic acid, (mercaptoacetyl)methyl-, phenyl ester, S-ester with O,O-dimethyl phosphorodithioate	100 O. 100 Sc.	N 100	25 10	25 100	50 100	100 100		
90	27460	Carbamic acid, (mercaptoacetyl)methyl-, o- tolyl ester, S-ester with O,O-dimethyl phosphorodithioate	100 O. 100 Sc.	N 100	25 I	25 I	25 100	I I		
91	27362	Carbamic acid, methyl-, 1,4-benzodioxan-5-yl ester	100 O. 100 Sc.	N 100	I I	I I	I 100	I I		
92	27475	Carbamic acid, methyl-, 3-sec-butyl-p- tolyl ester	100 O. 100 Sc.	5 5 ₁	I I	I I	I I	I I		
93	27649	Carbamic acid, methyl-, 2-chloro-m-tolyl ester	100 O. 100 Sc.	50 50	I I	I I	I I	I I		
94	29035	Carbamic acid, methyl-, 3,5-di-tert-butyl-4-hydroxyphenyl ester	100 O. 100 Sc.	N 100	I 100	I I	I I	I I		
95	27984-X	Carbamic acid, methyl-, 3,5-diethylphenyl ester	100 O. 100 Sc.	100 100	I 100	100 100	100 100	I 100		

96	27486	Carbamic acid, methyl-, 4-[(dimethylamino)-methyl]-2,3-dimethylphenyl ester	100	O.	25	I	I	I	I
			100	Sc.	2.5	I	I	I	I
97	27305	Carbamic acid, methyl-, 4-[[[(dimethylamino)-methylene]amino]- <u>m</u> -tolyl ester	10	O.	10	I	I	I	I
			10	Sc.	5	I	I	I	I
98	27907	Carbamic acid, methyl-, 4,5-dimethylbenzo-[<u>b</u>]thien-7-yl ester	100	O.	N	I	I	I	I
			100	Sc.	50	I	I	I	I
99	27524	Carbamic acid, methyl-, 1,1-dimethyl-4-indanyl ester	100	O.	50	I	I	I	I
			100	Sc.	50	I	I	I	I
100	27389	Carbamic acid, methyl-, <u>o</u> -1,3-dioxolan-2-ylphenyl ester	100	O.	N	I	I	I	I
			100	Sc.	25	I	I	I	I
101	27703	Carbamic acid, methyl-, 4-(<u>dl</u> -2-propynylamino)- <u>m</u> -tolyl ester	100	O.	50	I	I	I	I
			100	Sc.	25	I	I	I	I
102	27702	Carbamic acid, methyl-, 4-(<u>dl</u> -2-propynylamino)-3,5-xylyl ester	100	O.	10	I	I	I	I
			100	Sc.	25	I	I	I	I
103	27388	Carbamic acid, methyl-, <u>o</u> -1,3-dithiolan-2-ylphenyl ester	100	O.	25	I	I	I	I
			100	Sc.	N	I	I	I	I
104	27638	Carbamic acid, methyl-, ester with 3-chloro-3'-hydroxypropionalide	100	O.	N	I	I	50	I
			100	Sc.	100	I	I	100	I
105	27480	Carbamic acid, methyl-, ester with 4'-hydroxyacetanilide	100	O.	50	610	10	7	I
			100	Sc.	50	610	50	25	I
106	27640	Carbamic acid, methyl-, ester with 3'-hydroxy-3-butenanilide	100	O.	N	I	I	50	I
			100	Sc.	100	I	I	100	I
107	27637	Carbamic acid, methyl-, ester with 3'-hydroxybutyranilide	100	O.	N	I	I	50	I
			100	Sc.	100	I	I	100	I
108	27630	Carbamic acid, methyl-, ester with 3'-hydroxycyclopropanecarboxanilide	100	O.	N	100	50	25	I
			100	Sc.	N	I	I	I	I

See footnotes at end of table.

TABLE 2.--Systemic effectiveness of 474 compounds against secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs--Continued

[N, no dosage was lethal; I, no dosage was systemically active]

Item No.	AI3 No. (AI3-)	Chemical	Highest dosage (mg/kg) and method of admini- stration	Lowest dosage (mg/kg)--				
				Causing 100 percent kill of--				
				Lethal to guinea pigs	Larvae of--			
					Secon- dary screw- worms	Black blow flies	Adult stable flies	Nymphal lone star ticks
109	27639	Carbamic acid, methyl-, ester with 3'-hydroxyformanilide	100 O. 100 Sc.	N 25	I I	I I	50 50	I I
110	27397	Carbamic acid, methyl-, ester with (p-hydroxyphenyl)acetonitrile	100 O. 100 Sc.	50 100	I I	I I	I 100	I I
111	27727	Carbamic acid, methyl-, ester with 1-(m-hydroxyphenyl)-2-pyrrolidinone	100 O. 100 Sc.	N 100	I 650	I I	100 100	I I
112	27481	Carbamic acid, methyl-, ester with 3'-hydroxypropionanilide	100 O. 100 Sc.	N 50	50 50	50 50	25 25	I I
113	27657	Carbamic acid, methyl-, ester with 2,2,2-trifluoro-4'-hydroxyacetanilide	100 O. 100 Sc.	100 50	I 25	I 50	I 50	I 50
114	29007	Carbamic acid, methyl-, <u>alpha</u> -(ethylthio)-o-tolyl ester	100 O. 100 Sc.	50 50	I I	I I	I I	100 100
115	27695	Carbamic acid, methyl-, 2,3-(isopropylidene-dioxy)phenyl ester	100 O. 100 Sc.	10 10	I I	I I	I I	I I
116	25918	Carbamic acid, methyl-, o-(methoxymethoxy)-phenyl ester	100 O. 100 Sc.	N 100	I I	I I	50 25	I I
117	27384	Carbamic acid, methyl-, 7-methylbenzo[b]-thien-4-yl ester	100 O. 100 Sc.	N 50	I I	I I	I I	I I

118	27701	Carbamic acid, methyl-, <u>o</u> -[methyl(2-propynyl)-amino]phenyl ester	25 10	I I	I I	I 10	I I
119	27969	Carbamic acid, methyl-, 4-[methyl(2-propynyl)-amino]-3,5-xylyl ester	25 25	50 50	I I	I 50	I I
120	27173	Carbamic acid, methyl-, <u>o</u> -[3-(methylthio)propyl]-phenyl ester	100 100	I I	I I	I 1 ₁₀₀	100 100
121	27917	Carbamic acid, methyl-, 2-(methylthio)-3-pyridyl ester	25 50	I I	I I	I I	I I
122	27347	Carbamic acid, methylnitroso-, <u>m</u> -cumenyl ester	100 100	I I	I I	I I	I I
123	27704-X	Carbamic acid, methyl(phenylthio)-, <u>m</u> -sec-butylphenyl ester (approximately 58%), mixture with <u>p</u> - and <u>o</u> -isomers (29% and 5%, respectively)	10 10	I I	I I	I I	I I
124	27975-X	Carbamic acid, methylpropionyl-, <u>m</u> -cumenyl ester (60%) mixture with <u>p</u> -cumenyl ester (40%)	50 25	I I	I I	I I	I I
125	27458	Carbamic acid, methyl(trichloroacetyl)-, <u>m</u> -tert-butylphenyl ester	50 100	I I	I I	I I	I I
126	27454	Carbamic acid, methyl(trichloroacetyl)-, <u>m</u> -cumenyl ester	25 25	I I	I I	I I	I I
127	27982	Carbamic acid, methyl[(trichloromethyl)thio]- <u>o</u> -isopropoxyphenyl ester	100 50	I I	I I	I 1 ₁₀₀	I I
128	27573	Carbamic acid, thio-, <u>S</u> , <u>S'</u> -2-(dimethylamino)-trimethylene ester, hydrochloride	50 25	I I	I I	I I	I I
129	27636	Carbanilic acid, <u>p</u> -chloro-, 2-butynyl ester	N N	I I	I I	I I	I I

See footnotes at end of table.

TABLE 2.--Systemic effectiveness of 474 compounds against secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs--Continued

[N, no dosage was lethal; I, no dosage was systemically active]

Item No.	AI3 No. (AI3-)	Chemical	Highest dosage (mg/kg) and method of administration	Lowest dosage (mg/kg)--				
				Lethal to guinea pigs	Causing 100 percent kill of--			
					Secon- dary screw- worms	Larvae of--		
						Black blow flies	Adult stable flies	Nymphal lone star ticks
130	27995	Carbanillic acid, p-chloro-, 1-methyl-2-propynyl ester	100 O. 100 Sc.	N 100	I I	I I	I I	
131	27996	Carbanillic acid, 3,4-dichloro-, 1-methyl-2-propynyl ester	100 O. 100 Sc.	N 100	I I	I I	I I	
132	27942	Carbanillic acid, o-methoxy-, thymyl ester	100 O. 100 Sc.	N 100	I I	I I	I I	
133	27432	Carbanilide, 3-chloro-4-(p-chlorophenoxy)-4'-nitro	100 O. 100 Sc.	100 100	I 650	I 650	I I	
134	27440	Carbanilide, N,N'-diethyl-4,4'-dinitro	100 O. 100 Sc.	N N	I I	I I	I I	
135	27441	Carbanilide, N,N'-dimethyl-4,4'-dinitro-	100 O. 100 Sc.	N N	I I	I I	I I	
136	27244	Carbonic acid, 2-sec-butyl-4,6-dinitrophenyl isopropyl ester	100 O. 100 Sc.	50 50	I I	I I	I I	
137	29011	Carbonic acid, 2-tert-butyl-4,6-dinitrophenyl 2-fluoroethyl ester	100 O. 100 Sc.	51 2.5	I I	I I	I I	
138	70052	Carbonic acid, dithio-, O-butyl S-(p-nitrophenacyl) ester	100 O. 100 Sc.	N N	I I	I I	I I	

141	27856	Carbonimidodithioic acid, cyano-, (diethoxyphosphinothioyl)methyl 2-propenyl ester	100	O.	100	I	I	I	I
142	27976	Carbonimidothioic acid, [methylcarbamoyl oxy]-, dimethyl ester	100	O.	100	I	I	I	I
143	27795	Cinnamic acid, 5-chloro-2-(dimethylamino)- α - phenylbenzyl ester	N	O.	N	I	I	I	I
144	27740	Crotonic acid, 4-bromo-3-hydroxy-, methyl ester, dimethyl phosphate	50	O.	5	I	I	I	I
145	27941	Crotonic acid, 3-hydroxy-, ester with methyl lactate, dimethyl phosphate	N	O.	50	I	I	I	I
146	27756	Crotonic acid, 3-hydroxy-, ethyl ester, methyl propylphosphoramidate, (E)-	10	O.	100	100	I	I	100
147	27754	Crotonic acid, 3-hydroxy-, 1-ethyl-1-methyl- 2-propynyl ester, dimethyl phosphate	N	O.	100	I	I	I	I
148	27989	Crotonic acid, 3-hydroxy-, isopropyl ester, O- ester with O-methyl ethylphosphoramidothioate	25	O.	50	25	I	I	I
149	27753	Crotonic acid, 3-hydroxy-, isopropyl ester, methyl propylphosphoramidate, (E)-	100	O.	100	I	I	I	I
150	27752	Crotonic acid, 3-hydroxy-, 2-methoxy- 1-methylethyl ester, dimethyl phosphate	25	O.	10	I	I	I	100
151	27993	Crotonic acid, 3-hydroxy-, methyl ester, S-sec-butyl ethylphosphonodithioate, (Z)-	5	O.	50	I	I	I	I

See footnotes at end of table.

TABLE 2.--Systemic effectiveness of 474 compounds against secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs--Continued

[N, no dosage was lethal; I, no dosage was systemically active]

Item No.	AI3 No. (AI3--)	Chemical	Highest dosage (mg/kg) and method of administration	Lowest dosage (mg/kg)--				
				Lethal to guinea pigs	Causing 100 percent kill of--			
					Seco-	Black	Adult	Nymphal
					dary	blow	stable	lone
					screw-	flies	flies	star
					worms			ticks
152	27945	Crotonic acid, 3-hydroxy-, methyl ester, O-ester with <u>S</u> -ethyl ethylphosphonodithioate	50 O. 50 Sc.	25 25	I I	I I	I I	I I
153	27755	Crotonic acid, 3-hydroxy-, methyl ester, methyl ethylphosphoramidate, (E)-	100 O. 100 Sc.	10 5	50 25	50 25	I I	25 25
154	27483	Crotonic acid, 3-hydroxy-, α -methyl-p-methylsulfonyl)benzyl ester, dimethyl phosphate	100 O. 100 Sc.	100 50	I I	I I	I I	I I
155	27451	Crotonic acid, 3-hydroxy-, α -methyl-p-(methylthio)-benzyl ester, dimethyl phosphate	100 O. 100 Sc.	N 25	I I	I I	I I	I I
156	27429	Crotonic acid, thio-, <u>S</u> -phenyl ester	100 O. 100 Sc.	N N	I I	I I	I I	I I
157	25954	1,5,9-Cyclododecatriene, compound with O,O-diethyl phosphorodithioate (1:2)	100 O. 100 Sc.	N 100	I I	I I	I I	I I
158	27791	Cyclohexanecarboxylic acid, 5-chloro-2-(dimethylamino)- α -phenylbenzyl ester	100 O. 100 Sc.	N 100	I I	I I	I I	I I
159	27782	Cyclohexanecarboxylic acid, 5-chloro-2-(dimethylamino)- α -o-tolylbenzyl ester	100 O. 100 Sc.	N N	I I	I I	I I	I I

160	70087	Cyclohexanecarboxylic acid, 2-hydroxyethyl ester	100 O. 100 Sc.	N N	I I	I I	I I
161	27540	1,2-Cyclohexanediol, 1,2-dimethyl-, cyclic sulfite	100 O. 100 Sc.	N N	I I	I I	I I
162	27304	Cyclohexanone, 2-methyl-2-nitro, O-(methylcarbamoyl) oxime	100 O. 100 Sc.	25 10	I I	I I	I I
163	27462	1-Cyclopentene-1-carboxylic acid, 2-hydroxy-, methyl ester, dimethyl phosphate	100 O. 100 Sc.	N 100	I 1 ₁₀₀	I 1 ₁₀₀	I 1 ₁₀₀
164	27391	Cyclopropane, 1,1-dichloro-2,2-bis(p-ethoxyphenyl)-	100 O. 100 Sc.	N N	I I	I I	I I
165	27985	Cyclopropanecarboxylic acid, 3-(cyclopentylidenemethyl)-2,2-dimethyl-, (5-benzyl-3-furyl)methyl ester, <u>trans</u> -(+)-	100 O. 100 Sc.	25 25	I I	I I	I I
166	27987	Cyclopropanecarboxylic acid, 2,2-dimethyl-3-(2-methylpropenyl)-, (5-benzyl-3-furyl)methyl ester, <u>cis</u> -(+)-	100 O. 100 Sc.	50 100	I 50	I I	I I
167	27474	Cyclopropanecarboxylic acid, 2,2-dimethyl-3-(2-methylpropenyl)-, (5-benzyl-3-furyl)methyl ester, <u>cis,trans</u> -(±)-	100 O. 100 Sc.	N N	I I	I I	I I
168	27662	Cyclopropanecarboxylic acid, 2,2-dimethyl-3-(2-methylpropenyl)-, (5-benzyl-3-furyl)methyl ester, <u>trans</u> -(+)-	100 O. 100 Sc.	100 N	I 50	I I	I I
169	27809	Cyclopropanecarboxylic acid, 2,2-dimethyl-3-(2-methylpropenyl)-, 2,3-dihydro-3-benzofuranyl ester, <u>cis,trans</u> -(±)-	100 O. 100 Sc.	N N	I I	I I	I I
170	27944	Cyclopropanecarboxylic acid, 2,2-dimethyl-3-(2-methylpropenyl)-, 2,4-dimethylbenzyl ester, <u>trans</u> -(+)-	100 O. 100 Sc.	N N	I I	I I	I I
171	27958	Cyclopropanecarboxylic acid, 2,2,3,3-tetramethyl-, 4-phenoxy-2-butynyl ester	100 O. 100 Sc.	N N	I I	I I	I I

See footnotes at end of table.

TABLE 2.---Systemic effectiveness of 474 compounds against secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs--Continued

[N, no dosage was lethal; I, no dosage was systemically active]

Item No.	AI3 No. (AI3-)	Chemical	Highest dosage (mg/kg) and method of administration	Lowest dosage (mg/kg)---				
				Lethal to guinea pigs	Causing 100 percent kill of--		Adult stable flies	Nymphal lone star ticks
					Secondary dary screw worms	Larvae of--		
172	27532	Decylamine, <u>N,N</u> -diethyl-	100 O. 100 Sc.	N N	I I	I I	I I	I I
173	27531	Decylamine, <u>N,N</u> -dimethyl-	100 O. 100 Sc.	N N	I I	I I	I I	I I
174	27530	Decylamine, <u>N</u> -methyl-	100 O. 100 Sc.	100 100	I I	I I	I I	I I
175	27784	Dibenzamide, 3-chloro- <u>N</u> ,2,6-trimethoxy-	100 O. 100 Sc.	N 100	I I	I I	I I	I I
176	70181	DI-2,6-octadienylamine, <u>N</u> -[2-[2-(diethylamino)ethoxy]-1,1-dimethylethyl]-3,3',7,7'-tetramethyl-, (<u>E,E</u>)-	100 O. 100 Sc.	N 100	I I	I I	I I	I I
177	70283	DI-2,6-octadienylamine, <u>N</u> -[2-[2-(diethylamino)ethoxy]propyl]-3,3',7,7'-tetramethyl-	100 O. 100 Sc.	N 100	I I	I I	I I	I I
178	29006	1,3,2-Dioxaphosphorinane, 2-chloro-5,5-diethyl-, 2-sulfide	100 O. 100 Sc.	N N	100 50	100 100	I I	I I
179	29104	4H-1,3,2-Dioxaphosphorino[5,4-b]pyridine, 2-methoxy-6-methyl-, 2-sulfide	100 O. 100 Sc.	100 50	50 50	50 50	I I	I 50

180	27738	Distaunoxane, hexakis (β,β -dimethylphenethyl)-	100	I	I	I	I
			5	I	I	I	I
181	27810	1,4-Dithiepan-6-one, N- [(methylcarbamoyl)oxy]oxime	25	I	I	I	50
			25	I	I	I	25
182	27949	1,3-Dithiolane-2-carbonyl chloride, 2-methyl-, (6-chloro- α,α -trifluoro-m-tolyl)hydrazone	N	I	I	I	I
			N	I	I	I	I
183	27660	1,3-Dithiolane-2-carboxaldehyde, 2-methyl-,O- (methylcarbamoyl)oxime	10	I	I	I	I
			5	I	I	I	I
184	70350	2,6-Dodecadienoic acid, 10,ll-epoxy-3,7,10,ll- tetramethyl-, ethyl ester	50	I	I	I	I
			N	I	I	I	I
185	70348	2-Dodecenic acid, 7,ll-dichloro-3,7,ll- trimethyl-, ethyl ester, (E)-	N	I	I	I	I
			100	I	I	I	I
186	27915	Ethanesulfonic acid, ester with 4-hydroxy-2- isopropylbenzonitrile	N	I	I	I	100
			100	I	I	I	100
187	70083	Ethanol, 2,2'-(m-phenylenedioxy)dI-	N	--	I	I	I
			N	--	I	I	I
188	27728	Ethenesulfinic acid, 2,2-dichlorothio-, anhydrosulfide with O,O-dimethyl phosphorothioate	50	100	50	I	100
			25	I	I	I	I
189	70088	Flavon, 2',4',7-trimethoxy-2,4,4-trimethyl-	N	I	I	I	I
			100	I	I	I	I
190	29005	Formamidine, N'-(4-chloro-o-tolyl)-N-methyl-N- [(methylthio)methyl]-, hydrochloride	50	I	I	I	I
			100	I	I	I	I
191	29046	Formimidic acid, N- [methoxy(methylthio)phosphinyl]-, ethyl ester	50	25	25	10	50
			25	10	25	25	I

See footnotes at end of table.

TABLE 2.--Systemic effectiveness of 474 compounds against secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs--Continued

[N, no dosage was lethal; I, no dosage was systemically active]

Item No.	AL3 No. (AL3-)	Chemical	Highest dosage (mg/kg) and method of admini- stration	Lowest dosage (mg/kg)--				
				Lethal to guinea pigs	Causing 100 percent kill of--			
					Second- dary screw- worms	Black blow flies	Adult stable flies	Nymphal lone star ticks
192	27871	Glyoxylic acid, cyano-, methyl ester, ($\alpha, \alpha, \alpha, \alpha', \alpha', \alpha'$ -hexafluoro-3,5-xylol)hydrazone	100 O. 100 Sc.	N 50	I I	I I	I I	I I
193	70056	Hexanediamide, <u>N,N,N',N'</u> -tetraethyl-	100 O. 100 Sc.	N N	I I	I I	I I	I I
194	27431	Imidazole-1-carboxanilide, 2-methyl-4'-nitro-	100 O. 100 Sc.	N N	100 I	100 I	I I	I I
195	70150	Isothiocyanic acid, phthalimidomethyl ester	100 O. 100 Sc.	N N	I I	I I	I I	I I
196	27781	Isovaleric acid, 5-chloro-2-(dimethylamino)- α -o-tolylbenzyl ester	100 O. 100 Sc.	N N	I I	I I	I I	I I
197	70059	Lauric acid, diester with <u>N,N</u> -bis(2- hydroxyethyl)dodecanamide	100 O. 100 Sc.	50 50	I I	I I	I I	I I
198	61979	Maleimide, <u>N</u> -(hydroxymethyl)-	100 O. 100 Sc.	50 100	I I	I I	I I	I I
199	27910	Malononitrile, (3,5-di- <u>tert</u> -butyl-4- hydroxybenzylidene)-	100 O. 100 Sc.	10 10	I I	I I	I I	I I
200	27909	Malononitrile, (3,5-di- <u>tert</u> -butyl-4- hydroxybenzylidene)-, carbanilate (ester)	100 O. 100 Sc.	10 10	I I	I I	I I	I I

TABLE 2.---Systemic effectiveness of 474 compounds against secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs--Continued

[N, no dosage was lethal; I, no dosage was systemically active]

Item No.	A13 No. (A13-)	Chemical	Highest dosage (mg/kg) and method of admini- stration	Lowest dosage (mg/kg)--									
				Causing 100 percent kill of--									
				Lethal to guinea pigs	Secon- dary	Black blow flies	Adult stable flies	Nymphal lone star ticks	Larvae of--	Secon- dary	Black blow flies	Adult stable flies	Nymphal lone star ticks
192	27871	Glyoxylic acid, cyano-, methyl ester, ($\alpha, \alpha, \alpha, \alpha', \alpha', \alpha'$ -hexafluoro-3,5-xylyl)hydrazone	100 O. 100 Sc.	I 50	N 50	I I	I I	I I	I I	I I	I I		
193	70056	Hexanediamide, $\underline{N, N, N', N'}$ -tetraethyl-	100 O. 100 Sc.	I I	N N	I I	I I	I I	I I	I I	I I		
194	27431	Imidazole-1-carboxanilide, 2-methyl-4'-nitro-	100 O. 100 Sc.	100 I	N N	100 I	I I	I I	I I	I I	I I		
195	70150	Isothiocyanic acid, phthalimidomethyl ester	100 O. 100 Sc.	I I	N N	I I	I I	I I	I I	I I	I I		
196	27781	Isovaleric acid, 5-chloro-2-(dimethylamino)- α -o-tolylbenzyl ester	100 O. 100 Sc.	I I	N N	I I	I I	I I	I I	I I	I I		
197	70059	Lauric acid, diester with $\underline{N, N}$ -bis(2-hydroxyethyl)dodecanamide	100 O. 100 Sc.	I I	50 50	I I	I I	I I	I I	I I	I I		
198	61979	Maleimide, \underline{N} -(hydroxymethyl)-	100 O. 100 Sc.	I I	50 100	I I	I I	I I	I I	I I	I I		
199	27910	Malononitrile, (3,5-di- <u>tert</u> -butyl-4-hydroxybenzylidene)-	100 O. 100 Sc.	I I	10 10	I I	I I	I I	I I	I I	I I		
200	27909	Malononitrile, (3,5-di- <u>tert</u> -butyl-4-hydroxybenzylidene)-, carbamate (ester)	100 O. 100 Sc.	I I	10 10	I I	I I	I I	I I	I I	I I		

TABLE 2.—Systemic effectiveness of 474 compounds against secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs--Continued

[N, no dosage was lethal; I, no dosage was systemically active]

Item No.	AI3 No. (AI3-)	Chemical	Highest dosage (mg/kg) and method of administration	Lowest dosage (mg/kg)--				
				Causing 100 percent kill of--				
				Lethal to guinea pigs	Second-dary screw-worms	Black blow flies	Adult stable flies	Nymphal lone star ticks
214	70351	2-Octene, 6,7-epoxy-3,7-dimethyl-1-(2-propynyloxy)-	100 O. 100 Sc.	100 100	I I	I I	I I	I I
215	28930	1-Oxa-4-azaspiro[4.5]decane, 4-acetyl-3-ethyl-	100 O. 100 Sc.	N N	I I	I I	I I	I I
216	28876	1-Oxa-4-azaspiro[4.5]decane, 4-benzoyl-	100 O. 100 Sc.	N 100	I I	I I	I I	I I
217	27918	1,2,4-Oxadiazole, 5-amino-3-[2-(5-nitro-2-furyl)-vinyl]-, (E)-	100 O. 100 Sc.	N N	I I	— —	I I	I I
218	28953	2H-1,3-Oxazine, 3-acetyl-2-(2,6-dimethyl-5-heptenyl)tetrahydro-	100 O. 100 Sc.	N N	I I	I I	I I	I I
219	28951	2H-1,3-Oxazine, 3-acetyl-2-(1-ethylpentyl)tetrahydro-	100 O. 100 Sc.	N N	I I	I I	I I	I I
220	28949	2H-1,3-Oxazine, 3-acetyltetrahydro-2-isopropyl-	100 O. 100 Sc.	N N	I I	I I	I I	I I
221	28877	2H-1,3-Oxazine, 3-acetyltetrahydro-2-phenyl-	100 O. 100 Sc.	50 N	I I	I I	I I	I I
222	28964	2H-1,3-Oxazine, 3-acetyltetrahydro-2-(2-thienyl)-	100 O. 100 Sc.	N N	I I	I I	I I	I I

223	28954	2H-1,3-Oxazine, 3-benzoyl-2-(2,6-dimethyl-5-heptenyl)tetrahydro-	100 O.	N	I	I	I	I	I
			100 Sc.	100	I	I	I	I	I
224	28952	2H-1,3-Oxazine, 3-benzoyl-2-(1-ethylpentyl)-tetrahydro-	100 O.	N	I	I	I	I	I
			100 Sc.	N	I	I	I	I	I
225	28948	2H-1,3-Oxazine, 3-benzoyltetrahydro-2-isopropyl-	100 O.	N	I	I	I	I	I
			100 Sc.	N	I	I	I	I	I
226	28965	2H-1,3-Oxazine, 3-benzoyltetrahydro-2-(3-pyridyl)-	100 O.	N	I	I	I	I	I
			100 Sc.	N	I	I	I	I	I
227	28963	Oxazolidine, 3-acetyl-2-(2,6-dimethyl-5-heptenyl)-	100 O.	N	I	I	I	I	I
			100 Sc.	N	I	I	I	I	I
228	28927	Oxazolidine, 3-acetyl-4,4-dimethyl-2-phenyl-	100 O.	N	I	I	I	I	I
			100 Sc.	N	I	I	I	I	I
229	70138	Oxazolidine, 3-acetyl-4-ethyl-2-(1-ethylpentyl)-	100 O.	N	I	I	I	I	I
			100 Sc.	N	I	I	I	I	I
230	28926	Oxazolidine, 3-acetyl-4-ethyl-2-isopentyl-2-methyl-	100 O.	N	I	I	I	I	I
			100 Sc.	N	I	I	I	I	I
231	70140	Oxazolidine, 3-acetyl-2-(1-ethylpentyl)-	100 O.	N	I	I	I	I	I
			100 Sc.	100	I	I	I	I	I
232	70139	Oxazolidine, 3-acetyl-2-(1-ethylpentyl)-4,4-dimethyl-	100 O.	N	I	I	I	I	I
			100 Sc.	N	I	I	I	I	I
233	28929	Oxazolidine, 3-acetyl-4-ethyl-2-phenyl-	100 O.	N	I	I	I	I	I
			100 Sc.	100	I	I	I	I	I
234	28867	Oxazolidine, 3-acetyl-2-isopentyl-2-methyl-	100 O.	100	I	I	I	I	I
			100 Sc.	N	I	I	I	I	I
235	28928	Oxazolidine, 3-acetyl-2-[3,4-(methylenedioxy)-phenyl]-	100 O.	N	I	I	I	I	I
			100 Sc.	100	I	I	I	I	I
236	28868	Oxazolidine, 3-acetyl-2-phenyl-	100 O.	N	I	I	I	I	I
			100 Sc.	100	I	I	I	I	I

See footnotes at end of table.

TABLE 2.---Systemic effectiveness of 474 compounds against secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs--Continued

[N, no dosage was lethal; I, no dosage was systemically active]

Item No.	AI3 No. (AI3-)	Chemical	Highest dosage (mg/kg) and method of administration	Lowest dosage (mg/kg)---					
				Lethal to guinea pigs	Causing 100 percent kill of---				
					Second-ary screw-worms	Larvae of---			
						Black blow flies	Adult stable flies	Nymphal lone star ticks	
237	28878	Oxazolidine, 3-benzoyl-4-ethyl-2-isopentyl-2-methyl-	N	I	I	I	I	I	
			N	I	I	I	I	I	
238	28875	Oxazolidine, 3-benzoyl-2-ethyl-2-methyl-	N	I	I	I	I	I	
			N	I	I	I	I	I	
239	28874	Oxazolidine, 3-benzoyl-2-isobutyl-2-methyl-	N	I	I	I	I	I	
			100	I	I	I	I	I	
240	28869	Oxazolidine, 3-benzoyl-2-isopentyl-2-methyl-	100	I	I	I	I	I	
			100	I	I	I	I	I	
241	28866	Oxazolidine, 3-benzoyl-2-phenyl-	N	I	I	I	I	I	
			100	I	I	I	I	I	
242	28864	Oxazolidine, 3-butyl-2-phenyl-	N	I	I	I	I	I	
			100	I	I	I	I	I	
243	27535	2,4-Pentamediol, cyclic sulfite, <u>meso</u> -	N	I	I	I	I	I	
			100	I	I	I	I	I	
244	27400	2-Pentenoic acid, 2,3,5,5,5-pentachloro-4-oxo-, (Z)-	N	I	I	I	I	I	
			100	I	I	I	I	I	
245	27401	2-Pentenoic acid, 2,3,5,5,5-pentachloro-4-oxo-, phenyl ester, (Z)-	N	I	I	I	I	I	
			N	I	I	I	I	I	

246	27463	3-Penten-2-one, 4-methyl-, <u>O</u> -(methylcarbamy1)-oxime, (<u>Z</u>)-	50	I	I	I	I	I
			10	I	I	I	I	I
247	27994	Phenol, 2-bromo-4-chloro-6-nitro-	100	I	I	I	I	I
			50	I	I	I	I	I
248	27627	Phenyl isocyanide, p-[(<u>p</u> -tert-butylphenyl)-thio]-	N	I	I	I	I	I
			N	I	I	I	I	I
249	27825	3-Phospholene, 3-chloro-1-methoxy-, 1-sulfide	N	I	I	I	I	I
			N	I	I	I	I	I
250	29094	Phosphonamidothioic acid, N-(<u>a</u> -aminobenzylidene)- <u>P</u> -ethyl-, <u>S</u> -methyl ester	50	I	I	I	I	I
			50	100	100	25	50	50
251	27641	Phosphonamidothioic acid, <u>P</u> -ethyl-, <u>S</u> -ethyl ester	10	10	5	I	I	I
			5	5	5	I	10	10
252	27872	Phosphonic acid, phenyl-, <u>O</u> -(4-bromo-2,5-dichlorophenyl) <u>O</u> -methyl ester	N	I	I	I	I	I
			100	I	I	I	I	I
253	27729	Phosphonic acid, [(1,2,2-trichloroethyl)sulfinyl]-, diethyl ester	25	I	I	I	I	I
			10	I	I	I	I	I
254	27730	Phosphonodithioic acid, allyl-, <u>S</u> , <u>S</u> -dipropyl ester	100	I	I	I	I	I
			50	I	I	I	I	I
255	27948	Phosphonodithioic acid, ethyl-, <u>O</u> -benzyl <u>S</u> -2-propynyl ester	10	I	I	I	I	I
			50	I	I	I	I	I
256	27747	Phosphonodithioic acid, ethyl-, <u>S</u> -(2-bromo-2-chloroethyl) <u>O</u> -ethyl ester	10	I	I	I	I	I
			25	I	I	I	I	I
257	27632	Phosphonodithioic acid, ethyl-, <u>S</u> -(<u>p</u> -chlorophenyl) <u>O</u> -isobutyl ester	5	I	I	I	I	I
			100	I	I	I	I	I
258	27946	Phosphonodithioic acid, ethyl-, <u>O</u> -cyclopentyl <u>S</u> -2-propynyl ester	10	I	I	I	I	I
			25	I	I	I	I	I

See footnotes at end of table.

TABLE 2.--Systemic effectiveness of 474 compounds against secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs--Continued

[N, no dosage was lethal; I, no dosage was systemically active]

Item No.	AI3 No. (AI3-)	Chemical	Highest dosage (mg/kg) and method of administration	Lowest dosage (mg/kg)---				
				Lethal to guinea pigs	Second- dary screw- worms	Black blow flies	Adult stable flies	Nymphal lone star ticks
259	27361	Phosphonodithioic acid, ethyl-, S-[(2,4-dichlorophenoxy)methyl] O-propyl ester	100 O. 100 Sc.	25 50	I I	I I	I I	I I
260	27857	Phosphonodithioic acid, ethyl-, S-[(ethylthio)-methyl] ester, O-ester with acetone oxime	10 O. 10 Sc.	5 1	I I	I I	I I	I I
261	27861	Phosphonodithioic acid, ethyl-, S-phenyl ester, O-ester with acetone oxime	50 O. 50 Sc.	10 10	I I	I I	I I	I I
262	27838	Phosphonodithioic acid, (2-isopropoxyvinyl)-, S,S-dipropyl ester	100 O. 100 Sc.	25 10	I I	I I	I I	I I
263	27839	Phosphonodithioic acid, [2-(isopropylthio)-vinyl]-, S,S-dimethyl ester	100 O. 100 Sc.	50 25	I I	I I	I I	I I
264	27661	Phosphonodithioic acid, (2-methoxyvinyl)-, S,S-diisopropyl ester	100 O. 100 Sc.	100 50	I I	I I	I I	I I
265	27916	Phosphonothioic acid, ethyl-, O-(7-chlorobenzofurazan-4-yl) O-ethyl ester	50 O. 50 Sc.	10 10	I I	I I	I I	I I
266	27919	Phosphonothioic acid, ethyl-, O-(2,5-dichloro-4-iodophenyl) O-ethyl ester	100 O. 100 Sc.	50 50	100 I	50 I	I I	I I
267	27575	Phosphonothioic acid, ethyl-, O-[α -(diethylamino)-4-(methylthio)-o-tolyl] O-ethyl ester	10 O. 50 Sc.	5 10	I I	I I	I I	I I

268	27860	Phosphonothioic acid, ethyl-, O-ester with acetone oxime, O-ester with p-hydroxybenzonitrile	10 O. 25 Sc.	10 25	I I	I I	I I	I I
269	27666	Phosphonothioic acid, ethyl-, O-ethyl ester, O-ester with p-hydroxybenzaldehyde, O-(butylcarbamoyl)oxime	100 O. 100 Sc.	10 10 25 25	25 I I I	I I I I	I I I I	100 I
270	27549	Phosphonothioic acid, ethyl-, O-ethyl ester, O-ester with p-hydroxybenzaldehyde, O-[(m-chlorophenyl)carbamoyl]oxime	50 O. 50 Sc.	10 10	I I	I I	I I	I I
271	27859	Phosphonothioic acid, ethyl-, O-(4-nitro-m-tolyl) ester, O-ester with acetone oxime	50 O. 50 Sc.	10 25	I I	I I	I I	I I
272	27913	Phosphonothioic acid, ethyl-, O-(4-nitro-m-tolyl) ester, O-ester with 3,3-dimethyl-2-butanone oxime	10 O. 10 Sc.	10 5	I I	I I	I I	I I
273	27912	Phosphonothioic acid, ethyl-, O-(2,4,5,-trichlorophenyl) ester, O-ester with acetone oxime	25 O. 25 Sc.	10 25	I I	I I	I I	I I
274	29098	Phosphonothioic acid, methyl-, O-(4-bromo-2,5-dichlorophenyl) O-methyl ester	100 O. 100 Sc.	N 50	50 25	I I	I I	I I
275	27453	Phosphonothioic acid, methyl-, O-(4-bromo-2,5-dichlorophenyl) O-propyl ester	100 O. 100 Sc.	50 100	100 I	I I	I I	I I
276	27634	Phosphonothioic acid, methyl-, O-[2,5-dichloro-4-(methylthio)phenyl] O-ethyl ester	100 O. 100 Sc.	10 50	I 10	I I	I I	I I
277	27471	Phosphonothioic acid, methyl-, O-(3,4-dichlorophenyl) O-methyl ester	100 O. 100 Sc.	25 100	100 100	100 I	100 I	100 I
278	27399	Phosphonothioic acid, methyl-, O-ethyl O-6-quinolyl ester	100 O. 100 Sc.	5 1	100 100	I I	I I	10 50
279	27378	Phosphonothioic acid, phenyl-, O-(4-bromo-2,5-dichlorophenyl) O-methyl ester	100 O. 100 Sc.	50 100	100 I	I I	I I	I I

See footnotes at end of table.

TABLE 2.--Systemic effectiveness of 474 compounds against secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs--Continued

[N, no dosage was lethal; I, no dosage was systemically active]

Item No.	AI3 No. (AI3-)	Chemical	Highest dosage (mg/kg) and method of administration	Lowest dosage (mg/kg)--				
				Causing 100 percent kill of--				
				Lethal to guinea pigs	Second-dary screwworms	Black blow flies	Adult stable flies	Nymphal lone star ticks
280	29061	Phosphonothioic acid, phenyl-, O-ethyl O-(6-methyl-3-pyridyl) ester	100 O. 100 Sc.	25 50	I 10	I I	I I	50 50
281	29093	Phosphonotriethioic acid, ethyl-, tert-butyl ester, ester with N-(mercaptomethyl)phthalimide	100 O. 100 Sc.	25 50	I I	I I	I I	I I
282	29041	Phosphonotriethioic acid, ethyl-, (ethylthio)-methyl isopropyl ester	100 O. 100 Sc.	10 25	I I	I I	I I	I I
283	27979	Phosphoramidic acid, isopropyl-, ethyl ester, S-ester with mercapto-2-propanone O-methylloxime	50 O. 50 Sc.	25 25	I I	I I	I I	I I
284	27572	Phosphoramidic acid, isopropyl-, ethyl 4-(methylthio)-m-tolyl ester	100 O. 100 Sc.	50 100	25 10	25 25	I 25	25 100
285	27656	Phosphoramidic acid, isopropyl-, methyl p-nitrophenyl ester	100 O. 100 Sc.	N 100	I I	I I	I I	I I
286	27628	Phosphoramidic acid, (2-mercaptoethyl)-, diethyl ester, S-ester with O,O-dimethyl phosphorothioate	100 O. 100 Sc.	100 100	I I	I I	I I	I I
287	27629	Phosphoramidic acid, (2-mercaptoethyl)-, diethyl ester, S-ester with O-methyl O-propylphosphorothioate	100 O. 100 Sc.	25 50	I I	I I	I I	I I

288	27914	Phosphoramidic acid, methyl-, 2-(diethylamino)-6-methyl-4-pyrimidinyl methyl ester	100	I	I	I	I	I	I
			100	I	I	I	I	I	I
289	29009	Phosphoramidic acid, methyl-, 2-(diisopropylamino)-6-methyl-4-pyrimidinyl methyl ester	N	I	I	I	I	I	I
			100	I	I	I	I	I	I
290	27732	Phosphoramidodithioic acid, isopropyl-, S,S-dimethyl ester	N	I	I	I	I	I	I
			25	I	I	I	I	I	I
291	27731	Phosphoramidodithioic acid, methyl-, S,S-dipropyl ester	10	50	I	I	I	I	I
			5	100	50	I	I	I	I
292	27822	Phosphoramidodithioic acid, acetyl-, O,S-dimethyl ester	N	50	25	25	25	25	100
			100	50	25	25	25	25	100
293	27578	Phosphoramidodithioic acid, (1-aminoethylidene)-, O,O-bis(p-bromophenyl)ester	10	I	I	I	I	I	I
			50	I	I	I	I	I	I
294	27579	Phosphoramidodithioic acid, (1-aminoethylidene)-, O-(p-bromophenyl) O-methyl ester	5	I	I	I	I	I	10
			5	10	I	I	I	I	I
295	27580	Phosphoramidodithioic acid, (1-aminoethylidene)-, O-(p-chlorophenyl) O-methyl ester	5	I	I	I	I	I	I
			5	I	I	I	I	I	I
296	27992	Phosphoramidodithioic acid, (1-aminoethylidene)-, O,S-dimethyl ester	100	100	50	100	100	100	100
			100	25	100	100	100	100	100
297	27558	Phosphoramidodithioic acid, isopropyl-, O-methyl O-(2,4,5-trichlorophenyl) ester	N	50	25	25	25	25	I
			100	25	25	25	25	25	I
298	27576	Phosphoramidodithioic acid, methyl-, O-methyl O-[p-(methylthio)phenyl] ester	5	5	10	10	10	10	5
			10	10	10	10	10	10	10
299	27823	Phosphoramidodithioic acid, propionyl-, O,S-dimethyl ester	N	25	25	25	25	25	I
			100	25	25	25	25	25	100
300	27490	Phosphoric acid, butyl 2,2-dichlorovinyl methyl ester	10	I	I	I	I	I	I
			5	I	I	I	I	I	I

See footnotes at end of table.

TABLE 2.--Systemic effectiveness of 474 compounds against secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs--Continued

[N, no dosage was lethal; I, no dosage was systemically active]

Item No.	AT3 No. (AT3-)	Chemical	Highest dosage (mg/kg) and method of administration	Lowest dosage (mg/kg)--				
				Lethal to guinea pigs	Causing 100 percent kill of--	Secondary screwworms	Black blow flies	Nymphal lone star ticks
301	27500	Phosphoric acid, 6-chlorobicyclo[3.2.0]hepta-2,6-dien-7-yl dimethyl ester	100 O. 100 Sc.	N 50	I I	I I	I I	I I
302	29060	Phosphoric acid, 2-chloro-1-(2,4-dichlorophenyl)-vinyl ethyl methyl ester	100 O. 100 Sc.	N 100	I 10	I 100	I 50	I I
303	27743	Phosphoric acid, 2-chloro-1-pyrazol-1-ylvinyl diethyl ester	100 O. 100 Sc.	2.5 5	I I	I I	I I	I I
304	27742	Phosphoric acid, 2,2-dichloro-1-(4,5-dimethylpyrazol-1-yl)vinyl diethyl ester	100 O. 100 Sc.	25 5	I I	I I	I I	I I
305	27741	Phosphoric acid, 2,2-dichloro-1-pyrazol-1-ylvinyl diethyl ester	100 O. 100 Sc.	5 5	I I	I I	I I	I I
306	27612	Phosphoric acid, diethyl ester, ester with 1-allyl-6-methyl-2(1H)-pyridone	100 O. 100 Sc.	5 5	I 25	I 100	I I	I 100
307	27840	Phosphoric acid, diethyl ester, ester with 3-[(2,2-dichloro-1-hydroxyvinyl)oxy]propionitrile	100 O.	25	I	I	I	I
308	27626	Phosphoric acid, diethyl ester, ester with o-tolylglyoxylonitrile oxime	100 O. 100 Sc.	N 50	I I	I I	I I	I I

309	27358	Phosphoric acid, dimethyl ester, ester with 2-chloro-N-ethylcrotonamide	100 O.	N	50	100	I	I	100
			100 Sc.	100	50	50	50		
310	27357	Phosphoric acid, dimethyl ester, ester with 2-chloro-N-methylcrotonamide	100 O.	100	50	50	I	I	50
			100 Sc.	50	100	50	50		50
311	27610	Phosphoric acid, dimethyl ester, ester with 1,6-dimethyl-2(1H)-pyridone	100 O.	5	I	I	I	I	I
			100 Sc.	1	I	I	I	I	I
312	27625	Phosphoric acid, dimethyl ester, ester with (E)-3-hydroxy-N-methoxy-N-methylcrotonamide	100 O.	50	50	50	I	I	50
			100 Sc.	50	50	50	I	I	25
313	27611	Phosphoric acid, dimethyl ester, ester with 6-methyl-1-propyl-2(1H)-pyridone	100 O.	5	I	I	I	I	I
			100 Sc.	5	I	I	I	I	I
314	27744	Phosphoric acid, dimethyl 1,2,5-thiadiazol-3-yl ester	100 O.	100	I	I	I	I	I
			100 Sc.	5	I	I	I	I	I
315	27521	Phosphoric acid, dimethyl 3,5,6-trichloro-2-pyridyl ester	100 O.	N	I	I	I	I	I
			100 Sc.	100	I	I	I	I	I
316	27424	Phosphorodithioic acid, S-2-butenyl O,O-dimethyl ester	100 O.	N	I	I	I	I	I
			100 Sc.	100	I	I	I	I	I
317	29082	Phosphorodithioic acid, S-(6-chlorothiochroman-4-yl) O,O-dimethyl ester	100 O.	N	100	I	I	I	50
			100 Sc.	100	I	I	I	I	I
318	29081	Phosphorodithioic acid, S-(7-chlorothiochroman-4-yl) O,O-dimethyl ester	100 O.	N	I	I	I	I	100
			100 Sc.	100	I	I	I	I	I
319	25943	Phosphorodithioic acid, O,O-diethyl ester, S-ester with 1-acetyl-3-(mercaptomethyl)-5,5-dimethylhydantoin	100 O.	25	I	100	I	I	I
			100 Sc.	100	I	I	I	I	I
320	27650	Phosphorodithioic acid, O,O-diethyl ester, S-ester with 3-(2-chloro-1-mercaptoethyl)-2-benzoxazolinone	100 O.	25	I	I	I	I	I
			100 Sc.	100	I	I	I	I	I

See footnotes at end of table.

TABLE 2.—Systemic effectiveness of 474 compounds against secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs—Continued

[N, no dosage was lethal; I, no dosage was systemically active]

Item No.	AI3 No. (AI3-)	Chemical	Highest dosage (mg/kg) and method of administration	Lowest dosage (mg/kg)--						
				Causing 100 percent kill of--						
				Lethal to guinea pigs	Larvae of--		Black blow flies	Adult stable flies	Nymphal lone star ticks	
					Second-ary screw-worms	Secon-dary				
321	27562	Phosphorodithioic acid, O,O-diethyl ester, S-ester with 4-chloro-2-(mercaptomethyl)-1(2H)-phthalazinone	100 O. 100 Sc.	50 50	I I	I I	I I	I I		
322	27316	Phosphorodithioic acid, O,O-diethyl ester, S-ester with N,N-diallyl-2-mercaptoacetamide	100 O. 100 Sc.	25 25	I I	50 100	I 50	I I		
323	27768	Phosphorodithioic acid, O,O-diethyl ester, S-ester with 2',6'-diethyl-2-mercaptoacetanilide	100 O. 100 Sc.	50 100	6 100	50 6 50	I I I	I I I		
324	27736	Phosphorodithioic acid, O,O-diethyl ester, S-ester with 3-(difluoromethyl)-1-(mercaptomethyl)-4-methyl-Δ ² -1,2,4-triazoline 5-thione	100 O. 100 Sc.	5 25	I I	I I	I I	I I		
325	27836	Phosphorodithioic acid, O,O-diethyl ester, S-ester with 4-(2-mercaptoethyl)-3-thiomorpholinone	100 O. 100 Sc.	25 25	I I	I I	I I	25 50		
326	25938	Phosphorodithioic acid, O,O-diethyl ester, S-ester with 3-(mercaptomethyl)-2-benzothiazolinone	100 O. 100 Sc.	100 50	I I	I I	I I	I I		
327	27707	Phosphorodithioic acid, O,O-diethyl ester, S-ester with 4-(mercaptomethyl)-2-methoxy-Δ ² -1,3,4-thiodiazolin-5-one	50 O. 50 Sc.	25 25	I I	I I	I I	I I		

328	27911	Phosphorodithioic acid, <u>O</u> , <u>O</u> -diethyl ester, S-ester with 2-mercapto-N-methyl-N-(4- methyl-1,3-thiazol-2-yl)acetamide	50	0.	25	I	I	I	I
			50	Sc.	25	I	I	I	I
329	27735	Phosphorodithioic acid, <u>O</u> , <u>O</u> -diethyl ester, S-ester with 1-(mercaptomethyl)-4-methyl- 3-(trifluoromethyl)-Δ ² -1,2,4-triazoline- 5-thione	100	0.	10	100	I	I	I
			100	Sc.	100	100	I	I	I
330	27414	Phosphorodithioic acid, <u>O</u> , <u>O</u> -diethyl S-[2- (methylthio)propyl] ester	50	0.	10	I	I	I	I
			50	Sc.	25	I	I	I	I
331	25822	Phosphorodithioic acid, <u>O</u> , <u>O</u> -diethyl S- (tetrahydro-3-thienyl) ester	100	0.	50	4 I	I	I	I
			100	Sc.	N	4 I	I	I	I
332	27370	Phosphorodithioic acid, <u>O</u> , <u>O</u> -diethyl S- (3,4,4-trifluoro-3-butenyl) ester	100	0.	N	50	100	100	I
			100	Sc.	N	50	100	I	I
333	27653	Phosphorodithioic acid, <u>O</u> , <u>O</u> -dimethyl ester, S-ester with 1-acetyl-3-(mercaptomethyl)- 5,5-dimethylhydantoin	100	0.	50	100	50	I	25
			100	Sc.	100	50	100	I	100
334	27652	Phosphorodithioic acid, <u>O</u> , <u>O</u> -dimethyl ester, S-ester with 1-acetyl-3- (mercaptomethyl)hydantoin	100	0.	6	25	25	I	25
			100	Sc.	6	25	25	I	25
335	27956	Phosphorodithioic acid, <u>O</u> , <u>O</u> -dimethyl ester, S-ester with 1-hexanoyl-3- (mercaptomethyl)hydantoin	100	0.	N	I	100	I	I
			100	Sc.	100	100	50	I	100
336	27360	Phosphorodithioic acid, <u>O</u> , <u>O</u> -dimethyl ester, S-ester with N-isopropyl-2-mercapto-N- methoxyacetamide	100	0.	N	6	50	100	100
			100	Sc.	N	6	50	I	I
337	27346	Phosphorodithioic acid, <u>O</u> , <u>O</u> -dimethyl ester, S-ester with N-(2-mercaptoethyl)acetamide	100	0.	N	25	10	50	25
			100	Sc.	N	25	25	50	25
338	27405	Phosphorodithioic acid, <u>O</u> , <u>O</u> -dimethyl ester, S-ester with N-(1-mercaptoethyl)succinimide	100	0.	N	50	50	I	100
			100	Sc.	N	10	100	I	I

See footnotes at end of table.

TABLE 2.--Systemic effectiveness of 474 compounds against secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs--Continued

[N, no dosage was lethal; I, no dosage was systemically active]

Item No.	AI3 No. (AI3-)	Chemical	Highest dosage (mg/kg) and method of administration	Lowest dosage (mg/kg)---					
				Lethal to guinea pigs	Secon-dary screw-worms	Black blow flies	Adult stable flies	Nymphal lone star ticks	
339	27111	Phosphorodithioic acid, <u>O</u> , <u>O</u> -dimethyl ester, <u>S</u> -ester with 3-(mercaptomethyl)-2-benzothiazolinone	100 O. 100 Sc.	N N	I I	I I	I I	I I	
340	27615	Phosphorodithioic acid, <u>O</u> , <u>O</u> -dimethyl ester, <u>S</u> -ester with 3-(mercaptomethyl)-1-methylhydantoin	100 O. 100 Sc.	100 100	50 50	100 100	I I	25 25	
341	27614	Phosphorodithioic acid, <u>O</u> , <u>O</u> -dimethyl ester, <u>S</u> -ester with 3-(mercaptomethyl)-2,4-oxazolidinedione	100 O. 100 Sc.	50 100	50 100	25 100	25 50	25 100	
342	25872	Phosphorodithioic acid, <u>O</u> , <u>O</u> -dimethyl ester, <u>S</u> -ester with <u>N</u> -(mercaptomethyl)succinimide	50 O. 50 Sc.	50 50	10 25	25 50	50 I	25 25	
343	27798	Phosphorodithioic acid, <u>O</u> , <u>O</u> -dimethyl ester, <u>S</u> -ester with mercapto-2-propanone dimethyl mercaptal	100 O. 100 Sc.	100 100	I I	I I	I I	I I	
344	27980	Phosphorodithioic acid, <u>O</u> , <u>O</u> -dimethyl ester, <u>S</u> -ester with mercapto-2-propanone <u>O</u> -methylloxime	100 O. 100 Sc.	100 N	I I	I I	I I	I I	
345	27412	Phosphorodithioic acid, <u>O</u> , <u>O</u> -dimethyl <u>S</u> -[2-(methylthio)propyl] ester	100 O. 100 Sc.	N 100	100 I	50 I	100 I	25 50	

346	27422	Phosphorodithioic acid, <u>O,O</u> -dimethyl <u>S</u> -propenyl ester	100 O. 100 Sc.	N 100	100 I	I I	1 ₁₀₀ 100	I I
347	27848	Phosphorodithioic acid, <u>O</u> -ethyl <u>S</u> -[2-(isopropylthio)ethyl] <u>S</u> -propyl ester	100 O. 100 Sc.	100 50	I 100	100 100	I I	100 I
348	27806	Phosphorodithioic acid, <u>O</u> -ethyl <u>S</u> -[2-(methylsulfinyl)ethyl] <u>S</u> -propyl ester	100 O. 100 Sc.	50 25	100 50	50 50	I I	50 50
349	27761	Phosphorodithioic acid, <u>O</u> -ethyl <u>S</u> -[2-(methylthio)ethyl] <u>S</u> -propyl ester	100 O. 100 Sc.	50 5	50 50	50 50	I I	50 50
350	27760	Phosphorodithioic acid, <u>O</u> -ethyl <u>S</u> -[2-(methylthio)propyl] <u>S</u> -propyl ester	100 O. 100 Sc.	100 25	I 50	I 25	I I	I 50
351	27808	Phosphorodithioic acid, <u>O</u> -ethyl <u>S</u> -[2-(phenylthio)ethyl] <u>S</u> -propyl ester	100 O. 100 Sc.	100 100	I I	I I	I I	I I
352	27807	Phosphorodithioic acid, <u>O</u> -ethyl <u>S</u> -propyl ester, <u>S</u> -ester with 3-(mercaptomethyl)-1-methylhydrouacil	50 O. 50 Sc.	25 10	25 25	25 50	I I	25 50
353	27837	Phosphorodithioic acid, <u>O</u> -ethyl <u>S</u> -propyl ester, <u>S</u> -ester with 3-(mercaptomethyl)-1-methyl-2,4(1H,3H)-quinazolinedione	100 O. 100 Sc.	50 10	I I	I I	I I	I I
354	27762	Phosphorodithioic acid, <u>O</u> -ethyl <u>S</u> -propyl <u>S</u> -[2-(propylthio)ethyl] ester	100 O. 100 Sc.	50 10	100 50	100 50	I I	100 6 25
355	27759-X	Phosphorodithioic acid, <u>O</u> -ethyl <u>S</u> -propyl <u>S</u> -[2-(propylthio)propyl] ester (crude)	100 O. 100 Sc.	100 25	I I	I I	I I	100 I
356	27413	Phosphorodithioic acid, <u>S</u> -[2-(ethylthio)propyl] <u>O,O</u> -dimethyl ester	100 O. 100 Sc.	6 25 100	6 25 I	6 25 I	100 I	25 1 ₁₀₀
357	27901	Phosphorodithioic acid, <u>S</u> -[(5-methoxy-1,2,4-thiadiazol-3-yl)methyl] <u>O,O</u> -dimethyl ester	100 O. 100 Sc.	N 100	I 50	I I	I I	I I
358	27482	Phosphorodithioic acid, <u>O,O,S</u> -trimethyl ester	100 O. 100 Sc.	N 100	I I	I I	1 ₁₀₀ I	I I

See footnotes at end of table.

TABLE 2.--Systemic effectiveness of 474 compounds against secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs--Continued

[N, no dosage was lethal; I, no dosage was systemically active]

Item No.	AI3 No. (AI3-)	Chemical	Highest dosage (mg/kg) and method of administration	Lowest dosage (mg/kg) --						
				Lethal to guinea pigs	Causing 100 percent kill of --					
					Secon- dary screw- worms	Larvae of --				
						Black blow flies	Adult stable flies	Nymphal lone star ticks		
359	27845	Phosphorothioic acid, O-1,2-benzisoxazol-3-yl O,O-diethyl ester	100 O. 100 Sc.	50 50	I 50	I I	I 6 50	I I	6 50	
360	27607	Phosphorothioic acid, O-(3-bromo-5,7-dimethylpyrazolo[1,5-a]pyrimidin-2-yl) O,O-diethyl ester	100 O. 100 Sc.	50 100	I I	I I	I I	I I	I I	
361	27826	Phosphorothioic acid, O-(3-bromo-7-methylpyrazolo[1,5-a]pyrimidin-2-yl) O,O-diethyl ester	100 O. 100 Sc.	25 10	I I	I I	I I	I I	I I	
362	29038	Phosphorothioic acid, O-butyl O-methyl O-1,2,5-thiadiazol-3-yl ester	100 O. 100 Sc.	50 5	I I	I I	I I	I I	I I	
363	27444	Phosphorothioic acid, O-(4-chloro-7-benzofurazanyl) O,O-dimethyl ester	100 O. 100 Sc.	N 50	I I	I I	I 100	I I	I I	
364	27608	Phosphorothioic acid, O-(3-chloro-5,7-dimethylpyrazolo[1,5-a]pyrimidin-2-yl) O,O-diethyl ester	100 O. 100 Sc.	50 100	I I	I I	I I	I I	I I	
365	29008-X	Phosphorothioic acid, O-(6(or 7)-chloro-2-quinoxaliny) O,O-diethyl ester	100 O. 100 Sc.	N 50	50 50	I I	I I	I I	I I	
366	27331	Phosphorothioic acid, S-(4-chlorotetrahydro-3-thienyl) O,O-diethyl ester, 1,1-dioxide	100 O. 100 Sc.	10 5	I I	I I	I I	I I	I I	

367	29083	Phosphorothioic acid, <u>S</u> -(6-chlorothiochroman-4-yl) <u>O</u> , <u>O</u> -dimethyl ester	100	O.		N	I	I	100	100
			100	Sc.		25	I	I	I	I
368	29099	Phosphorothioic acid, <u>O</u> -[2,5-dichloro-4-(ethylthio)phenyl] <u>O</u> , <u>O</u> -dimethyl ester	100	O.		N	I	100	I	I
			100	Sc.		100	I	I	I	I
369	27635	Phosphorothioic acid, <u>O</u> -[2,5-dichloro-4-(methylthio)phenyl] <u>O</u> , <u>O</u> -diethyl ester	100	O.		50	50	25	I	I
			100	Sc.		100	10	50	I	I
370	27908	Phosphorothioic acid, <u>O</u> -[2,5-dichloro-4-(methylthio)phenyl] <u>O</u> , <u>O</u> -dimethyl ester	100	O.		100	I	I	I	I
			100	Sc.		50	50	100	I	I
371	27698	Phosphorothioic acid, <u>O</u> -[2-(diethylamino)-6-methyl-4-pyrimidinyl] <u>O</u> , <u>O</u> -diethyl ester	100	O.		50	6	25	I	I
			100	Sc.		100	100	I	6	50
372	27699	Phosphorothioic acid, <u>O</u> -[2-(diethylamino)-6-methyl-4-pyrimidinyl] <u>O</u> , <u>O</u> -dimethyl ester	100	O.		N	100	100	100	I
			100	Sc.		100	100	100	I	I
373	27577	Phosphorothioic acid, <u>O</u> , <u>O</u> -diethyl ester, <u>S</u> -ester with <u>N</u> -(1-cyano-1-methylethyl)-2-mercaptoacetamide	100	O.		10	I	100	I	50
			100	Sc.		25	I	100	I	50
374	27900	Phosphorothioic acid, <u>O</u> , <u>O</u> -diethyl ester, <u>O</u> -ester with <u>N</u> , <u>N</u> -diethyl-3-hydroxy-6-oxo-1(6H)-pyridazinecarboxamide	100	O.		25	25	50	I	6
			100	Sc.		10	100	25	I	25
375	27812	Phosphorothioic acid, <u>O</u> , <u>O</u> -diethyl ester, <u>S</u> -ester with 5,5-dimethyl-3-thiomorpholinone	10	O.		5	I	I	I	I
			10	Sc.		2.5	I	I	I	I
376	29095	Phosphorothioic acid, <u>O</u> , <u>O</u> -diethyl ester, <u>O</u> -ester with 3-ethoxy-5-hydroxyisothiazole-4-carbonitrile	100	O.		50	I	I	I	I
			100	Sc.		50	I	I	I	I
377	27543	Phosphorothioic acid, <u>O</u> , <u>O</u> -diethyl ester, <u>O</u> -ester with 4'-hydroxyacetophenone <u>O</u> -(butylcarbamoyl) oxime	100	O.		100	100	I	50	I
			100	Sc.		50	I	I	I	I
378	27654	Phosphorothioic acid, <u>O</u> , <u>O</u> -diethyl ester, <u>O</u> -ester with 4'-hydroxyacetophenone <u>O</u> -(ethoxycarbonyl) oxime	100	O.		50	6	25	I	I
			100	Sc.		50	100	25	I	I

See footnotes at end of table.

TABLE 2.—Systemic effectiveness of 474 compounds against secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs—Continued

[N, no dosage was lethal; I, no dosage was systemically active]

Item No.	AI3 No. (AI3-)	Chemical	Highest dosage (mg/kg) and method of administration	Lowest dosage (mg/kg)—				
				Causing 100 percent kill of—				
				Lethal to guinea pigs	Larvae of—			
					Second-dary screwworms	Black blow flies	Adult stable flies	Nymphal lone star ticks
379	27542	Phosphorothioic acid, <u>O</u> , <u>O</u> -diethyl ester, <u>O</u> -ester with 4'-hydroxyacetophenone <u>O</u> -(methylcarbamoyl)oxime	50 100	50 25	50 I	50 50	I I	
380	27648	Phosphorothioic acid, <u>O</u> , <u>O</u> -diethyl ester, <u>O</u> -ester with 4-hydroxy- <u>m</u> -anisaldehyde <u>O</u> -(methylcarbamoyl)oxime	100 100	50 25	100 I	50 I	I I	
381	27507	Phosphorothioic acid, <u>O</u> , <u>O</u> -diethyl ester, <u>O</u> -ester with <u>p</u> -hydroxybenzaldehyde <u>O</u> -(allylcarbamoyl)oxime	10 10	50 10	50 I	10 10	I I	
382	27665	Phosphorothioic acid, <u>O</u> , <u>O</u> -diethyl ester, <u>O</u> -ester with <u>p</u> -hydroxybenzaldehyde <u>O</u> -(1H-azepin-1-ylcarbonyl)oxime	25 10	I 6	25 5	25 I	I I	
383	27508	Phosphorothioic acid, <u>O</u> , <u>O</u> -diethyl ester, <u>O</u> -ester with <u>p</u> -hydroxybenzaldehyde <u>O</u> -(butylcarbamoyl)oxime	25 25	50 I	10 I	10 25	I I	
384	27664	Phosphorothioic acid, <u>O</u> , <u>O</u> -diethyl ester, <u>O</u> -ester with <u>p</u> -hydroxybenzaldehyde <u>O</u> -(dimethylcarbamoyl)oxime	50 100	25 25	25 25	10 25	50 I	
385	27720	Phosphorothioic acid, <u>O</u> , <u>O</u> -diethyl ester, <u>O</u> -ester with <u>p</u> -hydroxybenzaldehyde <u>O</u> -(hexylcarbamoyl)oxime	25 100	6 I	25 I	50 I	I I	

386	27506	Phosphorothioic acid, <u>O</u> , <u>O</u> -diethyl ester, <u>O</u> - ester with <u>p</u> -hydroxybenzaldehyde <u>O</u> - (methylcarbamoyl) oxime	50	O.	50	10	10	10	5	I
			50	Sc.	25	25	50	5	I	
387	27647	Phosphorothioic acid, <u>O</u> , <u>O</u> -diethyl ester, <u>O</u> - ester with <u>p</u> -hydroxybenzaldehyde <u>O</u> - (morpholinocarbonyl) oxime	100	O.	50	50	50	50	I	100
			100	Sc.	50	100	100	I	I	I
388	27950	Phosphorothioic acid, <u>O</u> , <u>O</u> -diethyl ester, <u>O</u> - ester with 3-hydroxy- <u>N</u> , <u>N</u> -dimethyl-6-oxo-1(6H)- pyridazinepropionamide	10	O.	5	1	I	I	I	I
			10	Sc.	5	10	10	I	I	10
389	29096	Phosphorothioic acid, <u>O</u> , <u>O</u> -diethyl ester, <u>O</u> - ester with 5-hydroxy-3-methoxyisothiazole-4- carbonitrile	50	O.	50	I	I	I	I	I
			50	Sc.	50	I	I	I	I	I
390	27544	Phosphorothioic acid, <u>O</u> , <u>O</u> -diethyl ester, <u>O</u> - ester with 4'-hydroxy-2'-methylacetophenone <u>O</u> -acetyloxime	100	O.	N	100	100	100	100	100
			100	Sc.	100	I	I	I	I	I
391	27651	Phosphorothioic acid, <u>O</u> , <u>O</u> -diethyl ester, <u>S</u> - ester with 3-(mercaptomethyl)-2,4- oxazolidinedione	10	O.	1	10	I	I	I	10
			10	Sc.	1	I	I	I	I	5
392	29042	Phosphorothioic acid, <u>O</u> , <u>O</u> -diethyl ester, <u>O</u> - ester with 2-thiopheneglyoxylonitrile oxime	100	O.	N	I	I	I	100	100
			100	Sc.	100	I	I	I	I	I
393	27841	Phosphorothioic acid, <u>O</u> , <u>O</u> -diethyl ester, <u>O</u> - ester with <u>o</u> -tolylglyoxylonitrile oxime	100	O.	N	I	I	I	100	50
			100	Sc.	100	I	I	I	100	I
394	27416	Phosphorothioic acid, <u>O</u> , <u>O</u> -diethyl <u>S</u> -[2- (ethylthio)propyl] ester	100	O.	25	I	I	I	I	I
			100	Sc.	10	I	I	I	I	I
395	27764	Phosphorothioic acid, <u>O</u> , <u>O</u> -diethyl <u>O</u> -(1-phenyl- 1H-1,2,4-triazol-3-yl) ester	100	O.	25	50	100	I	I	I
			100	Sc.	10	50	50	100	I	50
396	27394	Phosphorothioic acid, <u>O</u> , <u>O</u> -diethyl <u>O</u> -2- quinoxaliny1 ester	100	O.	25	I	I	I	I	I
			100	Sc.	10	I	I	I	I	I
397	27371	Phosphorothioic acid, <u>O</u> , <u>O</u> -diethyl <u>S</u> -(3,4,4- trifluoro-3-butenyl) ester	100	O.	100	50	50	50	50	I
			100	Sc.	50	50	50	100	100	100

See footnotes at end of table.

TABLE 2.--Systemic effectiveness of 474 compounds against secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs--Continued

[N, no dosage was lethal; I, no dosage was systemically active]

Item No.	AI3 No. (AI3-)	Chemical	Highest dosage (mg/kg) and method of administration	Lowest dosage (mg/kg) --				
				Lethal to guinea pigs	Second-ary screw-worms	Black blow flies	Adult stable flies	Nymphal lone star ticks
398	27769	Phosphorothioic acid, O,O-dimethyl ester, O-ester with 2-chloro-N,N-diethyl-4-hydroxybenzenesulfonamide	100 O. 100 Sc.	N 100	I 50	100 100	100 100	I I
399	27609	Phosphorothioic acid, O,O-dimethyl ester, O-ester with 1,6-dimethyl-2(1H)-pyridone	100 O. 100 Sc.	10 5	I I	I I	I I	I I
400	27820	Phosphorothioic acid, O,O-dimethyl ester, S-ester with N-ethyl-3-mercaptoacrylamide, (Z)-	50 O. 50 Sc.	50 25	10 10	5 10	25 I	50 25
401	27746	Phosphorothioic acid, O,O-dimethyl ester, O-ester with glyoxylonitrile, p-hydroxyphenyl isopropyl mercaptal	100 O. 100 Sc.	100 100	25 I	25 100	50 I	25 I
402	27745	Phosphorothioic acid, O,O-dimethyl ester, O-ester with [(p-hydroxyphenyl)thio]phenylacetoneitrile	100 O. 100 Sc.	100 100	25 I	25 I	50 I	50 100
403	27815	Phosphorothioic acid, O,O-dimethyl ester, S-ester with 3-(mercaptomethyl)-1,5-dimethylhydroureacil	100 O. 100 Sc.	100 10	100 25	100 25	I I	10 10
404	27805	Phosphorothioic acid, O,O-dimethyl ester, S-ester with 3-(mercaptomethyl)-1-(2-methoxyethyl)hydantoin	25 O. 25 Sc.	25 25	I I	I I	I I	10 25

405	27618	Phosphorothioic acid, <u>O</u> , <u>O</u> -dimethyl ester, <u>S</u> - ester with 3-(mercaptomethyl)-1- methylhydantoin	25	0.	10	10	10	10	I	10	2.5
			25	Sc.	10	2.5	5		I		
406	27804	Phosphorothioic acid, <u>O</u> , <u>O</u> -dimethyl ester, <u>S</u> - ester with 3-(mercaptomethyl)-1- methylhydroureacil	50	0.	25	25	25	25	I	5	
			50	Sc	50	50	50	50	I	10	
407	27617	Phosphorothioic acid, <u>O</u> , <u>O</u> -dimethyl ester, <u>S</u> - ester with 3-(mercaptomethyl)-2,4- oxazolidinedione	50	0.	25	25	25	25	I	10	
			50	Sc.	25	10	10	10	I	5	
408	27616	Phosphorothioic acid, <u>O</u> , <u>O</u> -dimethyl ester, <u>S</u> - ester with 3-(mercaptomethyl)-2,4- thiazolidinedione	10	0.	10	10	10	10	I	I	
			10	Sc.	5	5	5	5	I	5	
409	27813	Phosphorothioic acid, <u>O</u> , <u>O</u> -dimethyl ester, <u>S</u> - ester with 2-mercapto-N-(2-oxo-3- oxazolidinyl)-acetamide	100	0.	N	I	I	I	I	6	50
			100	Sc.	100	100	100	100	I	6	50
410	29102	Phosphorothioic acid, <u>O</u> , <u>O</u> -dimethyl ester, <u>O</u> - ester with phenylglyoxylonitrile oxime	100	0.	100	I	I	I	I	I	
			100	Sc.	100	I	I	I	I	I	
411	29043	Phosphorothioic acid, <u>O</u> , <u>O</u> -dimethyl ester, <u>O</u> - ester with 2-thiopheneglyoxylonitrile oxime	100	0.	N	I	I	I	I	I	
			100	Sc.	50	100	I	I	I	I	
412	29101	Phosphorothioic acid, <u>O</u> , <u>O</u> -dimethyl ester, <u>O</u> - ester with <u>o</u> -tolylglyoxylonitrile oxime	100	0.	N	I	I	I	I	I	
			100	Sc.	50	I	I	I	I	I	
413	29037	Phosphorothioic acid, <u>O</u> , <u>O</u> -dimethyl <u>O</u> -(5-phenyl- 1,2,4-thiadiazol-3-yl) ester	100	0.	N	I	I	I	I	I	
			100	Sc.	100	100	I	I	I	I	
414	29040	Phosphorothioic acid, <u>O</u> , <u>O</u> -dimethyl <u>O</u> -1,2,5- thiadiazol-3-yl ester	100	0.	N	I	I	I	I	I	
			100	Sc.	100	25	I	I	I	I	
415	27520	Phosphorothioic acid, <u>O</u> , <u>O</u> -dimethyl <u>O</u> -(3,5,6- trichloro-2-pyridyl) ester	100	0.	N	I	I	I	I	I	
			100	Sc.	100	25	I	I	I	I	
416	27161	Phosphorothioic acid, <u>O</u> , <u>O'</u> -(sulfonyldi-p- phenylene) <u>O</u> , <u>O</u> , <u>O'</u> , <u>O'</u> -tetramethyl ester	100	0.	100	I	I	I	I	I	
			100	Sc.	100	I	I	I	I	I	

See footnotes at end of table.

TABLE 2.--Systemic effectiveness of 474 compounds against secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs--Continued

[N, no dosage was lethal; I, no dosage was systemically active]

Item No.	AI3 No. (AI3-)	Chemical	Highest dosage (mg/kg) and method of administration	Lowest dosage (mg/kg) --				
				Lethal to guinea pigs	Causing 100 percent kill of--	Second- dary screw- worms	Black blow flies	Adult stable flies
								Nymphal lone star ticks
417	28800	Piperidine, 1-benzoyl-2-methyl-	100 O. 100 Sc.	N 50	I I	I I	I I	I I
418	28801	Piperidine, 1-benzoyl-4-methyl-	100 O. 100 Sc.	N 50	I I	I I	I I	I I
419	27529	Piperidine, 1-decyl-	100 O. 100 Sc.	N 100	I I	I I	I I	I I
420	27541	Piperidine, 1-decyl-4-methyl-	100 O. 100 Sc.	N 100	I I	I I	I I	I I
421	28565	Piperidine, 2,6-dimethyl-1-m-toluyl-	100 O. 100 Sc.	N N	I I	I I	I I	I I
422	70282	Piperidine, 1-[2-[2-(2-isobornyloxy)ethoxy]-ethyl]-	100 O. 100 Sc.	N 100	I I	I I	I I	I I
423	27533	Piperidine, 1-(5,5,7,7-tetramethyl-2-octanyl)-	100 O. 100 Sc.	N 100	I I	I I	I I	I I
424	28563	Piperidine, 1-m-toluyl-2-propyl-	100 O. 100 Sc.	N 100	I I	I I	I I	I I
425	28564	Piperidine, 1-m-toluyl-4-propyl-	100 O. 100 Sc.	N N	I I	I I	I I	I I

426	27991	Pivalic acid, ester with 3-hydroxy-2-mesitylindone	100 O. 100 Sc.	N 50	I I	I I	5 5
427	27990	Propane, 1,1-bis(p-ethoxyphenyl)-2-nitro-	100 O. 100 Sc.	50 50	I I	I I	I I
428	23395	Propane, 1,1-bis(p-methoxyphenyl)-2,2-dimethyl-	100 O. 100 Sc.	N N	I I	I I	I I
429	70446	1-Propanol, 2-[(3,7-dimethyloctyl)amino]-2-methyl-	100 O. 100 Sc.	N 100	I I	I I	I I
430	70515	1-Propanol, 2-methyl-2-(octylamino)-	100 O. 100 Sc.	N N	I I	I I	I I
431	27571	1-Propanone, 2-methyl-1-(2-thienyl)-, O-(methylcarbamoyl)oxime	100 O. 100 Sc.	25 10	I I	I I	I I
432	27796	Propionic acid, 2-bromo-2-methyl-, 5-chloro-2-(dimethylamino)- α -phenylbenzyl ester	100 O. 100 Sc.	N N	I I	I I	I I
433	27785	Propionic acid, 2-bromo-2-methyl-, 5-chloro-2-(dimethylamino)- α -o-tolylbenzyl ester	100 O. 100 Sc.	N N	I I	I I	I I
434	27794	Propionic acid, 2-phenoxy-, 5-chloro-2-dimethylamino)- α -phenylbenzyl ester	100 O. 100 Sc.	N N	I I	I I	I I
435	27779	Propionic acid, 2-phenoxy-, 5-chloro-2-dimethylamino)- α -o-tolylbenzyl ester	100 O. 100 Sc.	N N	I I	I I	I I
436	27528	Pyridine, 2-(2-methoxyethoxy)-	100 O. 100 Sc.	N 100	I I	I I	I I
437	28870	Pyrrolidine, 1-benzoyl-	100 O. 100 Sc.	N N	I I	I I	I I
438	27957	Pyrvaldehyde, 1-(phenylhydrazone)	100 O. 100 Sc.	N 100	I I	I I	I I
439	29020	Salicylanilide, 3'-chloro-4'-(p-chlorophenoxy)-3,5-diodo-	100 O. 100 Sc.	N N	I I	I I	I I

See footnotes at end of table.

TABLE 2.--Systemic effectiveness of 474 compounds against secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs--Continued

[N, no dosage was lethal; I, no dosage was systemically active]

Item No.	A13 No. (A13-)	Chemical	Highest dosage (mg/kg) and method of admini- stration	Lowest dosage (mg/kg)--					
				Lethal to guinea pigs	Causing 100 percent kill of--				
					Secon- dary screw- worms	Larvae of--			
						Black blow flies	Adult stable flies	Nymphal lone star ticks	
440	27748	Salicylic acid, isopropyl ester, <u>O</u> -ester with <u>O</u> -ethyl isopropylphosphoramidithioate	100 O. 100 Sc.	50 100	25 25	25 50	25 I	25 50	
441	27658	Salicylic acid, isopropyl ester, <u>O</u> -ester with <u>O</u> -ethyl phosphoramidithioate	100 O. 100 Sc.	N N	50 50	10 6 25	I I	I 6 50	
442	27659	Salicylic acid, isopropyl ester, <u>O</u> -ester with <u>O</u> -methyl phosphoramidithioate	100 O. 100 Sc.	50 50	25 10	25 25	I 100	25 25	
443	27739	Stannane, chlorotris(β , β -dimethylphenethyl)-	100 O. 100 Sc.	100 50	I I	I I	I I	I I	
444	27428	Stannane, hexamethyl-di-	100 O. 100 Sc.	5 25	50 50	50 50	2.5 25	I I	
445	27799	Stannane, tributyl[(phenylsulfonyl)methyl]-	100 O. 100 Sc.	50 100	I I	I I	I I	I I	
446	29047	Stannane, tricyclohexylmercapto-, <u>O</u> , <u>O</u> -disopropyl phosphorodithioate	100 O. 100 Sc.	50 50	I I	I I	I I	I I	
447	27476	Succinic acid, mercapto-, bis[(methylthio)methyl] ester, <u>S</u> -ester with <u>O</u> , <u>O</u> -diethyl phosphorodithioate	100 O. 100 Sc.	10 25	I I	I I	I I	I I	50
448	27226	Sulfurous acid, 2-(<u>p</u> -tert-butylphenoxy)cyclohexyl 2-propynyl ester	100 O. 100 Sc.	100 N	I I	I I	I I	I I	

449	27855	Sulfurous acid, 1-[(p-tert-butylphenoxy)methyl]-propyl 2-butynyl ester	100 O.	N	I	I	I	I
			100 Sc.	N	I	I	I	I
450	27280	Sulfurous acid, decyl 2-propynyl ester	100 O.	100	I	I	I	I
			100 Sc.	N	I	I	I	I
451	27534	Sulfurous acid, diphenyl ester	100 O.	N	I	I	I	I
			100 Sc.	100	I	I	I	I
452	27852	Sulfurous acid, dodecyl 2-propynyl ester	100 O.	100	I	I	I	I
			100 Sc.	100	I	I	I	I
453	27279	Sulfurous acid, hexyl 2-propynyl ester	100 O.	N	I	I	I	I
			100 Sc.	N	I	I	I	I
454	27853	Sulfurous acid, octyl 2-propynyl ester	100 O.	N	I	I	I	I
			100 Sc.	100	I	I	I	I
455	28865	2,4,8,10-Tetraoxaspiro[5.5]undecane, 3,3,9,9-tetramethyl-	100 O.	N	I	I	I	I
			100 Sc.	N	I	I	I	I
456	27525	Thiocyanic acid, 2-methyl-1-naphthyl ester	100 O.	N	I	I	I	I
			100 Sc.	N	I	I	I	I
457	27733	3(2H)-Thiophenone, dihydro-4,4-dimethyl-, O-(methylcarbamoyl)oxime	10 O.	1.0	I	I	I	I
			10 Sc.	0.1	I	I	I	I
458	28950	m-Toluanide, N,N-diethyl-6-nitro-	100 O.	N	I	I	I	I
			100 Sc.	N	I	I	I	I
459	70084	o-Toluanide, N,N-dipentyl-	100 O.	N	--	I	I	I
			100 Sc.	N	--	I	I	I
460	70079	Toluene, 2,4,6-trimethoxy-	100 O.	N	I	I	I	I
			100 Sc.	N	I	I	I	I
461	27789	m-Toluic acid, 5-chloro-2-(dimethylamino)- α -phenylbenzyl ester	100 O.	N	I	I	I	I
			100 Sc.	N	I	I	I	I
462	27777	m-Toluic acid, 5-chloro-2-(dimethylamino)- α -o-tolylbenzyl ester	100 O.	100	I	I	I	I
			100 Sc.	100	I	I	I	I

See footnotes at end of table.

TABLE 2.--Systemic effectiveness of 474 compounds against secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs--Continued

[N, no dosage was lethal; I, no dosage was systemically active]

Item No.	AI3 No. (AI3-)	Chemical	Highest dosage (mg/kg) and method of administration	Lowest dosage (mg/kg)--				
				Causing 100 percent kill of--		Larvae of--		
				Lethal to guinea pigs	Secon- dary screw- worms	Black blow flies	Adult stable flies	Nymphal lone star ticks
463	27788	<u>o</u> -Toluic acid, 5-chloro-2-(dimethylamino)- α -phenylbenzyl ester	100 O. 100 Sc.	N N	I I	I I	I I	100 100
464	27773	<u>o</u> -Toluic acid, 5-chloro-2-(dimethylamino)- α - <u>o</u> -tolylbenzyl ester	100 O. 100 Sc.	50 N	I I	I I	I I	I I
465	29019	<u>p</u> -Toluoyl chloride, phenylhydrazone	100 O. 100 Sc.	10 50	I I	I I	I I	I I
466	70447	Triethylamine, 2-[(decahydro-2-naphthyl)oxy]-	100 O. 100 Sc.	N 100	I I	I I	I I	I I
467	70182-X	Triethylamine, 2-[3-(2-isobornyloxy)propoxy]-	100 O. 100 Sc.	N 100	I I	I I	I I	I I
468	70180	Triethylamine, 2-[4-(<u>p</u> -menth-1-en-8-yl)butoxy]-	100 O. 100 Sc.	100 100	I I	I I	I I	I I
469	70280	Triethylamine, 2-[(<u>p</u> -menth-8-en-3-yl)oxy]-	100 O. 100 Sc.	N 100	I I	I I	I I	I I
470	70281	Triethylamine, 2-(9-octadecenyl)-	100 O. 100 Sc.	N 100	I I	I I	I I	I I
471	70179	Triethylamine, 2-(octadecyloxy)-	100 O. 100 Sc.	N 100	I I	I I	I I	I I

472	70151	Urea, 3-isobornyl-1,1-dimethyl-	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
473	70152	Urea, 1-methoxy-1-methyl-3-[(<u>exo</u> -2-methyl-2-norbornyl)methyl]-	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
474	27967	2,4-Xylidine, <u>N,N'</u> -[(methylimino)dimethylidene]-di-	100	O.	100	I	I	I	I
			100	Sc.	N	I	I	I	I

¹High but not complete mortality.

²Some indication of repellency.

³Complete mortality at 4 and 24 hours at 10 mg/kg.

⁴Screwworm larvae.

⁵Lowest dosage given.

⁶Not complete mortality at higher dosages.

⁷Complete mortality at 4 and 24 hours at 100 mg/kg.

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AI3 No. (AI3-)	Company No.	Item No.	AI3 No. (AI3-)	Company No.	Item No.
16742	S.C. Johnson 3207-R-17	7	27391	Monsanto CP-51543	164
23122	Hoffmann La Roche RO2-8021	65	27394	Sandoz S-6538	396
23395	Merck L-485,719-0-9	428	27397	Stauffer R-11782	110
24864	PCRB RED I-90	44	27399	BAY 69588	278
25822	Hooker HRS-1296	331	27400	Air Products AP-20	244
25872	Hercules 7845-C	342	27401	Air Products AP-27	245
25918	Hercules 10016	116	27405	Hercules 13462	338
25935	Hercules 7224	139	27411	du Pont 1642	15
25938	Hercules 7347	326	27412	Esso ER 2430	345
25943	Hercules 7741	319	27413	Esso ER 2431	356
25954	Hercules 8414	157	27414	Esso ER 2432	330
25955	Hercules 8490	84	27416	Esso ER 2434	394
27048	PCRB PS I-100-H	210	27422	Esso ER 2440	346
27111	Rhodia RP-11807	339	27424	Esso ER 2442	316
27161	American Cyanamid E.I. 43913	416	27428	Pennwalt TD-5032	444
27173	Hooker HRS-1667	120	27429	Pennwalt TD-5063	156
27215	Thompson-Hayward TH-113M	66	27431	Merck L-592,807-0-3	194
27226	Ayerst AY-23595	448	27432	Merck L-585,851-0-3	133
27236	Hooker HRS-1671	206	27440	Merck L-551,303-0-3	134
27237	Hooker HRS-1694	207	27441	Merck L-546,104-0-3	135
27244	Union Carbide UC-19786	136	27444	Shell SD 15134	363
27279	Uniroyal UNI-D426	453	27451	Shell SD 14045	155
27280	Uniroyal UNI-C935	450	27453	CELA K-159	275
27301	Union Carbide UC-22878	209	27454	Hercules 9418	126
27304	Union Carbide UC-23746	162	27455	Hercules 9427	76
27305	Union Carbide UC-25074S	97	27456	Hercules 16805	72
27316	Monsanto CP-18978	322	27457	Hercules 16806	69
27323	BAY 58733	20	27458	Hercules 17643	125
27331	Hooker HRS-1879	366	27459	Hercules 17645	75
27334	Hercules 9007	70	27460	Hercules 17200	90
27346	Monsanto CP-49674	337	27462	Ansul AN-53782	163
27347	Hercules 11771-C	122	27463	Upjohn U-24,310	246
27348	Hercules 14469	86	27468	BAY 78537	68
27349	Monsanto CP-48985	63	27471	BAY 80833	277
27357	CIBA C-768	310	27474	Penick SBP-1382	167
27358	CIBA C-776	309	27475	BAY 62862	92
27360	CIBA C-2428	336	27476	Stauffer R-14016	447
27361	Stauffer R-10414	259	27480	Stauffer R-10534	105
27362	Stauffer R-11163	91	27481	Stauffer R-11520	112
27370	Stauffer R-8963	332	27482	Stauffer R-5910	358
27371	Stauffer R-11898	397	27483	Shell SD 15465	154
27378	Velsicol VCS 506	279	27486	Thompson-Hayward TH-397-1	96
27384	Mobil MC 1175	117	27490	Shell SD 15568	300
27388	du Pont 1804	103	27497	Mobil MC 1937	56
27389	du Pont 1519	100	27500	Chevron RE-9885	301
			27506	Stauffer R-14487	386

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27507	Stauffer R-14488	381	27614	Hercules 17409	341
27508	Stauffer R-14493	383	27615	Hercules 17413	340
27509	Stauffer R-15552-A	13	27616	Hercules 17884	408
27519	Shell SD 16898	18	27617	Hercules 18164	407
27520	Dowco 214	415	27618	Hercules 18526	405
27521	Dowco 217	315	27624	CIBA C-13963	81
27524	BAY 85032	99	27625	CIBA C-2307	312
27525	Thompson-Hayward TH-7465	456	27626	BAY 88991	308
27528	Reynolds SAA-6-A	436	27627	BAY 89504	248
27529	Reynolds SAA-14-G	419	27628	Pechiney-Progil	
27530	Reynolds SAA-21-G	174		LS 65-821	286
27531	Reynolds SAA-23-G	173	27629	Pechiney-Progil	
27532	Reynolds SAA-26-G	172		LS 67-559	287
27533	Reynolds SAA-28-A	423	27630	Stauffer R-13293	108
27534	Reynolds SM-2-G	451	27632	Stauffer R-15792	257
27535	Reynolds SM-4-G	243	27633	BAY 86256	34
27537	Reynolds SM-10-G	204	27634	CELA K-673	276
27538	Reynolds SM-11-G	202	27635	CELA S-2957	369
27539	Reynolds SM-32-A	203	27636	Stauffer R-17335	129
27540	Reynolds SM-50-A	161	27637	Stauffer R-12466	107
27541	Reynolds SAA-74-A	420	27638	Stauffer R-12783	104
27542	Stauffer R-14805	379	27639	Stauffer R-13580	109
27543	Stauffer R-14855	377	27640	Stauffer R-14327	106
27544	Stauffer R-15201	390	27641	Stauffer R-16374	251
27545	Velsicol PCS 1301	30	27645	Upjohn U-25,322	61
27546	Velsicol PCS 1302	29	27646	Upjohn U-27,415	62
27549	Stauffer R-15022	270	27647	Stauffer R-15996	387
27558	Dowco 177	297	27648	Stauffer R-14789	380
27562	American Cyanamid		27649	International Minerals	
	CL 23358	321		& Chemical 48003	93
27571	Upjohn U-26,549	431	27650	Hercules 16434	320
27572	BAY 68138	284	27651	Hercules 18290	391
27573	Diamond Shamrock		27652	Hercules 18009	334
	"Cartap"	128	27653	Hercules 18010	333
27575	BAY 53744	267	27654	Stauffer R-15018	378
27576	BAY 64054	298	27656	Sandoz 6607	285
27577	Thompson-Hayward		27657	Stauffer R-13906	113
	TH-427-1	373	27658	BAY 91273	441
27578	BAY 70926	293	27659	BAY 93820	442
27579	BAY 74747	294	27660	3M MBR 5667	183
27580	BAY 75752	295	27661	Chemagro 7375	264
27605	Geigy GS-19849	47	27662	Niagara NIA 18739	168
27607	BAY 75546	360	27664	Stauffer R-15206	384
27608	BAY 79845	364	27665	Stauffer R-16745	382
27609	Mobil MC 2951	399	27666	Stauffer R-15644	269
27610	Mobil MC 2572	311	27695	Fisons NC 6897	115
27611	Mobil MC 2702	313	27698	Plant Protection PP 211	371
27612	Mobil MC 2680	306	27699	Plant Protection PP 511	372
27613	Shell SD 17250	19			

AI3 No. (AI3-)	Company No.	Item No.	AI3 No. (AI3-)	Company No.	Item No.
27701	CIBA C-17018 (Ciba-Geigy CGA-13608)	118	27768	Monsanto MON 808	323
27702	CIBA C-17475	102	27769	Upjohn U-34,013	398
27703	CIBA C-17551	101	27770	Velsicol PCS 1475	33
27704-X	Chevron RE-11775	123	27771	Velsicol PCS 1574	46
27706	Hercules 18676	85	27772	Velsicol RCS 1633	77
27707	Geigy GS-13006	327	27773	Velsicol RCS 1712	464
27720	Stauffer R-15396	385	27774	Velsicol RCS 1718	55
27721	Diamond Shamrock DS-12581	10	27775	Velsicol RCS 1725	78
27722	Diamond Shamrock DS-12580	9	27776	Velsicol RCS 1740	53
27723	Pennwalt TD-8550	88	27777	Velsicol RCS 1744	462
27727	Shell SD 16961	111	27778	Velsicol RCS 1758	28
27728	Chemagro 5727	188	27779	Velsicol RCS 1770	435
27729	Chemagro 5777	253	27780	Velsicol RCS 1772	26
27730	Chemagro 7290	254	27781	Velsicol RCS 1779	196
27731	Chemagro 8096	291	27782	Velsicol RCS 1799	159
27732	Chemagro 8189	290	27783	Velsicol RCS 1817	73
27733	Diamond Shamrock DS-13182	457	27784	Velsicol RCS 1818	175
27734-X	Thompson-Hayward TH-459-I	82	27785	Velsicol RCS 1819	433
27735	Air Products AP-10045 (Lilly EL-411)	329	27786	Velsicol RCS 1821	45
27736	Air Products AP-36945 (Lilly No.)	324	27787	Velsicol RCS 1822	54
27738	Shell SD 14114	180	27788	Velsicol RCS 1824	463
27739	Shell SD 14328	443	27789	Velsicol RCS 1825	461
27740	Mobil MC 3427	144	27790	Velsicol RCS 1831	74
27741	Mobil MC 3470	305	27791	Velsicol RCS 1847	158
27742	Mobil MC 3515	304	27792	Velsicol RCS 1848	27
27743	Mobil MC 3815	303	27793	Velsicol RCS 1849	25
27744	Mobil MC 4044	314	27794	Velsicol RCS 1872	434
27745	BAY 82231	402	27795	Velsicol RCS 1888	143
27746	BAY 85950	401	27796	Velsicol RCS 1893	432
27747	BAY 85194	256	27797	Velsicol RCS 1894	14
27748	BAY 92114	440	27798	Stauffer R-19641	343
27750	Upjohn U-31,751	71	27799	Procter & Gamble PG 131	445
27752	Sandoz 52,092	150	27804	Esso ER-8687	406
27753	Sandoz 52,097	149	27805	Esso ER-8989	404
27754	Sandoz 52,114	147	27806	Esso ER-9007	348
27755	Sandoz 52,117	153	27807	Esso ER-9198	352
27756	Sandoz 52,118	146	27808	Esso ER-9362	351
27759-X	Esso ER-6622	355	27809	Procter & Gamble PG 132	169
27760	Esso ER-6624	350	27810	Plant Prot. PP 156	181
	Esso ER-8699	349	27812	Esso ER-8821	375
	Esso ER-8700	354	27813	Esso ER-9403	409
	Hoechst HOE 2960	395	27814	Esso ER-9404	12
			27815	Esso ER-9433	403
			27820	Rohm & Haas RH-412	400
			27822	Chevron RE-12,420	292
			27823	Chevron RE-13,913	299
			27824	Monsanto MON-856	201
			27825	BAY 85699	249
			27826	BAY HOX 1980	361

27835	Esso ER-9930	11	27949	Upjohn U-32,635	182
27836	Esso ER-9281	325	27950	Ansul AN-57003	388
27837	Esso ER-9669	353	27953	Eli Lilly EL-473	50
27838	Chemagro 8556	262	27954	Hercules 16801	89
27839	Chemagro 8807	263	27955	Hercules 18777	87
27840	Mobil MC 4158	307	27956	Hercules 20656	335
27841	BAY 88941	393	27957	Ansul AN-2507	438
27845	BAY HOX 2052	359	27958	Hoffmann-LaRoche	
27846	International Minerals			RO 3-5571	171
	& Chemical 3957	205	27967	Upjohn U-36,059	474
27848	Esso ER-9603	347	27968-X	Upjohn U-38,117	67
27850	Monsanto MON-768	59	27969	CIBA C-20132	119
27851	Diamond Shamrock		27975-X	Upjohn U-38,099	124
	DS-15647	64	27976	Shell SD 21427	142
27852	Uniroyal UNI-D239	452	27977	Velsicol RCS 1761	16
27853	Uniroyal UNI-D459	454	27978	Velsicol RCS 2087	17
27855	Uniroyal UNI-D048	449	27979	Velsicol HCS 3500	283
27856	Stauffer R-16876	141	27980	Velsicol HCS 3507	344
27857	Stauffer R-19738	260	27981	BAY KUE 2302	79
27859	Stauffer R-20620	271	27982	BAY KUE 2327	127
27860	Stauffer R-20621	268	27984-X	Wyandotte BAS-2350-I	95
27861	Stauffer R-20624	261	27985	Niagara NIA 24110	165
27871	BAY 93220	192	27987	Niagara NIA 26021	166
27872	Velsicol RCS 1855	252	27989	Sandoz SAN I 52,139	148
27900	Ansul AN-57000	374	27990	Cooper 11270	427
27901	Ansul AN-57605	357	27991	Union Carbide UC 41305	426
27905	Pennwalt TD-1771	21	27992	Stauffer R-17767	296
27906	Pennwalt TD-5056	60	27993	Stauffer R-24711	151
27907	Mobil MC 5664	98	27994	Ansul AN-2514	247
27908	CELA S-2956	370	27995	Hercules 24108	130
27909	Gulf S-18219	200	27996	Hercules 24734	131
27910	Gulf S-15126	199	28012-X	Armour ARD-801	22
27911	Stauffer R-19668	328	28019-X	Armour ARD-808	23
27912	Stauffer R-20625	273	28020-X	Armour ARD-809	24
27913	Stauffer R-20873	272	28563	Johnson 2134-R-123-4	424
27914	Sandoz SAN-52-135	288	28564	Johnson 2134-R-133-3	425
27915	Monsanto MON 720	186	28565	Johnson 2134-R-143-3	421
27916	Shell SD 23687	265	28800	Johnson 2650-R-54	417
27917	Shell SD 26890	121	28801	Johnson 2650-R-57	418
27918	Squibb SQ 18,506	217	28864	Johnson 2650-R-37	242
27919	CIBA C-18244	266	28865	Johnson 2650-R-68	455
27941	CELA K-357	145	28866	Johnson 2650-R-75	241
27942	Ansul AN 2189	132	28867	Johnson 2650-R-31	234
27944	M. G. King	170	28868	Johnson 2650-R-65	236
	<u>1-trans-dimethrin</u>		28869	Johnson 2650-R-35	240
27945	Stauffer R-22607	152	28870	Johnson 2650-R-21	437
27946	Stauffer R-23090	258	28874	Johnson 2650-R-90	239
27947	Stauffer R-23680	41	28875	Johnson 2650-R-92	238
27948	Stauffer R-24413	255	28876	Johnson 2650-R-93	216

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28877	Johnson 2650-R-97	221	29060	Shell SD 8713	302
28878	Johnson 2650-R-104	237	29061	Pepro LS 68-1323	280
28926	Johnson 2650-R-112	230	29081	Hoechst H-71-0518	318
28927	Johnson 2650-R-115	228	29082	Hoechst H-71-0608	317
28928	Johnson 2650-R-121	235	29083	Hoechst H-72-5757	367
28929	Johnson 2650-R-124	233	29093	Stauffer R-21279	281
28930	Johnson 2650-R-129	215	29094	Stauffer R-17543	250
28948	Johnson 2650-R-136	225	29095	CELAMERCK CM-IT 8737	376
28949	Johnson 2615-R-146	220	29096	CELAMERCK CM-IT 8986	389
28950	Johnson 2785-R-43	458	29098	CELAMERCK CM-S 4781	274
28951	Johnson 2815-R-3	219	29099	CELAMERCK CM-S 4506	368
28952	Johnson 2815-R-5	224	29101	BAY LOW 6599	412
28953	Johnson 2815-R-13	218	29102	BAY SRA 7660	410
28954	Johnson 2815-R-15	223	29104-X	Pepro LS 71.187	179
28962	Johnson 2785-R-59	35	61979	PCRB AD-6-86-B	198
28963	Johnson 2785-R-69	227	70035	Pfizer LM-62158	211
28964	Johnson 2815-R-25	222	70052	Hercules 11772	138
28965	Johnson 2815-R-29	226	70053	Hercules 12693	83
28966	Johnson 2815-R-32	2	70054	Hercules 11839	140
28967	Johnson 2815-R-42	5	70056	Pfizer LM-62587	193
28968	Johnson 2815-R-46	3	70057	Pfizer LM-62558	208
28969	Johnson 2815-R-49	4	70058	Pfizer LM-62487	213
28970	Johnson 2815-R-53	8	70059	Pfizer LM 14-62	197
28971	Johnson 2815-R-56	39	70078	Johnson 2815-R-96	42
28972	Johnson 2815-R-59	37	70079	Johnson 2815-R-99	460
28973	Johnson 2815-R-63	36	70080	Johnson 2815-R-102	32
29005	Chevron XE-274	190	70081	Johnson 2914-R-8	31
29006	BAY HOX 1619	178	70082	Johnson 2914-R-13	43
29007	BAY HOX 1901	114	70083	Johnson 2932-R-4	187
29008-X	Sandoz SAN I 52,129	365	70084	Johnson 2932-R-7-3	459
29009	Sandoz SAN I 132-247	289	70085	Johnson 2932-R-9-3	38
29010	BAY Vd 4326	52	70086	Johnson 2932-R-10-3	40
29011	PPG-140	137	70087	Johnson 2932-R-17-3	160
29019	Upjohn U-29,124	465	70088	Johnson 2932-R-18	189
29020	Merck MK-990	439	70138	Johnson 2932-R-70-4	229
29033	Mobil MC-6921	57	70139	Johnson 2932-R-72-4	232
29035	Gulf S-15053-B	94	70140	Johnson 2932-R-74-3	231
29036	Shell SD 27426	80	70141	Johnson 2932-R-76-3	6
29037	Shell SD 28071	413	70150	BAY 74774	195
29038	Shell SD 22639	362	70151	BAY 79062	472
29040	Shell SD 33255	414	70152	BAY 79504	473
29041	Stauffer R-22500	282	70179	Glidden-Durkee B-127-68	471
29042	Stauffer R-26374	392	70180	Glidden-Durkee B-136-68	468
29043	Stauffer R-26375	411	70181	Glidden-Durkee B-140-68	176
29046	Stauffer R-28585	191	70182-X	Glidden-Durkee B-144-68	467
29047	Stauffer R-28627	446	70280	Glidden-Durkee A-3-68	469
29048	Eli Lilly L-5	51	70281	Glidden-Durkee A-23-68	470
29049	Eli Lilly L-9	48	70282	Glidden-Durkee A-95-68	422
29055	Shell SD 32963	49	70283	Glidden-Durkee B-137-68	177

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70322	Johnson 3207-R-33	1
70348	Hoffmann-LaRoche	
	RO 6-8415	185
70349	Hoffmann-LaRoche	
	RO 8-3627	58
70350	Hoffmann-LaRoche	
	RO 8-4314	184
70351	Hoffmann-LaRoche	
	RO 8-5496	214
70446	Glidden GD-471	429
70447	Glidden GD-256	466
70484-X	Thompson-Hayward TH-7501	212
70515	Glidden-Durkee GD-880	430

<u>AI3 No.</u> <u>(AI3-)</u>	<u>Company No.</u>	<u>Item</u> <u>No.</u>
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